A. Test Results: Repair Trouble Administration System (RETAS) Functional Evaluation (M&R1)

1.0 Description

The Repair Trouble Administration System (RETAS) Functional Evaluation is a comprehensive review of all of the functional elements of the RETAS System. This is an evaluation of conformance to documented specifications and functionality in comparison to Bell Atlantic's Retail system for trouble administration.

Bell Atlantic's Repair Trouble Administration System (RETAS) is a front-end tool that allows Competitive Local Exchange Carriers (CLECs) to interface with BA-MA's "core factory" maintenance and repair (M&R) systems. CLECs enter troubles in RETAS using a web-based graphical user interface (GUI[76]).

For its retail customers, Bell Atlantic (BA) uses a separate system called Caseworker as the primary interface to the core factory M&R systems. For certain tasks, Bell Atlantic Retail Service Clerks (RSCs) directly access the core factory systems.

The test had two major components:

- Sub-test 1 – Bell Atlantic's trouble administration system available to CLECs, known as the Repair Trouble Administration System (RETAS), performs as documented in the RETAS Student User Guides.
- Sub-test 2 – Comparative functionality of RETAS to Bell Atlantic retail trouble administration systems.

2.0 Methodology

This section summarizes the test methodology.

2.1 Business Process Description

All states in Bell Atlantic territory use a single RETAS application. The current RETAS application is referred to as the Phase III GUI. RETAS manages the transactional aspect of maintenance and repair by routing the trouble to the core factory systems and returning electronic responses. RETAS does not perform any physical maintenance and repair functions. These are administered by the Loop Maintenance Operating System (LMOS[77]) and the Work Force Administration System (WFA/C[78]), the Bell Atlantic core factory systems. Bell Atlantic built the RETAS Extranet to give Resellers and CLECs access to Bell Atlantic's legacy Maintenance and Repair (M&R) systems.

[76] RETAS GUI Version III.
[77] LMOS, Loop Maintenance Operating System, is the M&R backend system for POTS circuits.
[78] WFA/C, Work Force Administration/Control System, is the M&R backend system for Special Circuits.

The RETAS front-end GUI is used for the following M&R transactions:

Perform Mechanized Loop Test (MLT)
Perform SARTS Test
Create Trouble Ticket
Modify Trouble Ticket
Status Trouble Ticket
Close Trouble Ticket
Perform Service Recovery
Request Trouble Ticket History
Request Trouble Ticket Extended History

2.2 Scenarios

Selected scenarios from the Master Test Plan were utilized during the evaluation.

2.3 Test Targets & Measures

The test targets were RETAS, Caseworker, RETAS Student Guides for CLECs (March 2000) and for Resellers (Version 1.0C). Processes, sub-processes, evaluation measures, and associated test cross-reference numbers are summarized in the following table. The last column, "Test Cross-Reference," indicates where the particular measures are addressed in Section 3.1 "Results & Analysis."

Table 1-1: Test Target Cross-Reference

Process	Sub-Process	Evaluation Measure	Test Cross-Reference
Trouble Management	Create/Enter Trouble Report	Existence	MR-1-1-3
Trouble Management	Create/Enter Trouble Report	Timeliness	MR-1-2-3
Trouble Management	Create/Enter Trouble Report	RETAS Usability	MR-1-3-3
Trouble Management	Create/Enter Trouble Report	Document Usability	MR-1-4-3
Trouble Management	Create/Enter Trouble Report	Parity with Bell Atlantic Retail	MR-1-5-3
Trouble Management	Modify TR	Existence	MR-1-1-4
Trouble Management	Modify TR	Timeliness	MR-1-2-4

Process	Sub-Process	Evaluation Measure	Test Cross-Reference
Trouble Management	Modify TR	RETAS Usability	MR-1-3-4
Trouble Management	Modify TR	Document Usability	MR-1-4-4
Trouble Management	Modify TR	Parity with Bell Atlantic Retail	MR-1-5-4
Trouble Management	Close/Cancel TR	Existence	MR-1-1-6
Trouble Management	Close/Cancel TR	Timeliness	MR-1-2-6
Trouble Management	Close/Cancel TR	RETAS Usability	MR-1-3-6
Trouble Management	Close/Cancel TR	Document Usability	MR-1-4-6
Trouble Management	Close/Cancel TR	Parity with Bell Atlantic Retail	MR-1-5-6
Trouble Management	Retrieve TR Status	Existence	MR-1-1-5
Trouble Management	Retrieve TR Status	Timeliness	MR-1-2-5
Trouble Management	Retrieve TR Status	RETAS Usability	MR-1-3-5
Trouble Management	Retrieve TR Status	Document Usability	MR-1-4-5
Trouble Management	Retrieve TR Status	Parity with Bell Atlantic Retail	MR-1-5-5
Trouble Management	Service Recovery Request	Existence	MR-1-1-9
Trouble Management	Service Recovery Request	Timeliness	MR-1-2-9
Trouble Management	Service Recovery Request	RETAS Usability	MR-1-3-9
Trouble Management	Service Recovery Request	Document Usability	MR-1-4-9
Trouble Management	Service Recovery Request	Parity with Bell Atlantic Retail	MR-1-5-9

Process	Sub-Process	Evaluation Measure	Test Cross-Reference
Trouble History Access	Retrieve Trouble History	Existence	MR-1-1-7
Trouble History Access	Retrieve Trouble History	Timeliness	MR-1-2-7
Trouble History Access	Retrieve Trouble History	RETAS Usability	MR-1-3-7
Trouble History Access	Retrieve Trouble History	Document Usability	MR-1-4-7
Trouble History Access	Retrieve Trouble History	Parity with Bell Atlantic Retail	MR-1-5-7
Trouble History Access	Retrieve extended trouble history	Existence	MR-1-1-8
Trouble History Access	Retrieve extended trouble history	Timeliness	MR-1-2-8
Trouble History Access	Retrieve extended trouble history	RETAS Usability	MR-1-3-8
Trouble History Access	Retrieve extended trouble history	Document Usability	MR-1-4-8
Trouble History Access	Retrieve extended trouble history	Parity with Bell Atlantic Retail	MR-1-5-8
Access to Test Capability	Initiate MLT & Receive Test response	Existence	MR-1-1-1
Access to Test Capability	Initiate MLT & Receive Test response	Timeliness	MR-1-2-1
Access to Test Capability	Initiate MLT & Receive Test response	RETAS Usability	MR-1-3-1
Access to Test Capability	Initiate MLT & Receive Test response	Document Usability	MR-1-4-1
Access to Test Capability	Initiate MLT & Receive Test response	Parity with Bell Atlantic Retail	MR-1-5-1
Access to Test Capability	Initiate SARTS & Receive Test response	Existence	MR-1-1-2
Access to Test Capability	Initiate SARTS & Receive Test response	Timeliness	MR-1-2-2
Access to Test Capability	Initiate SARTS & Receive Test response	RETAS Usability	MR-1-3-2

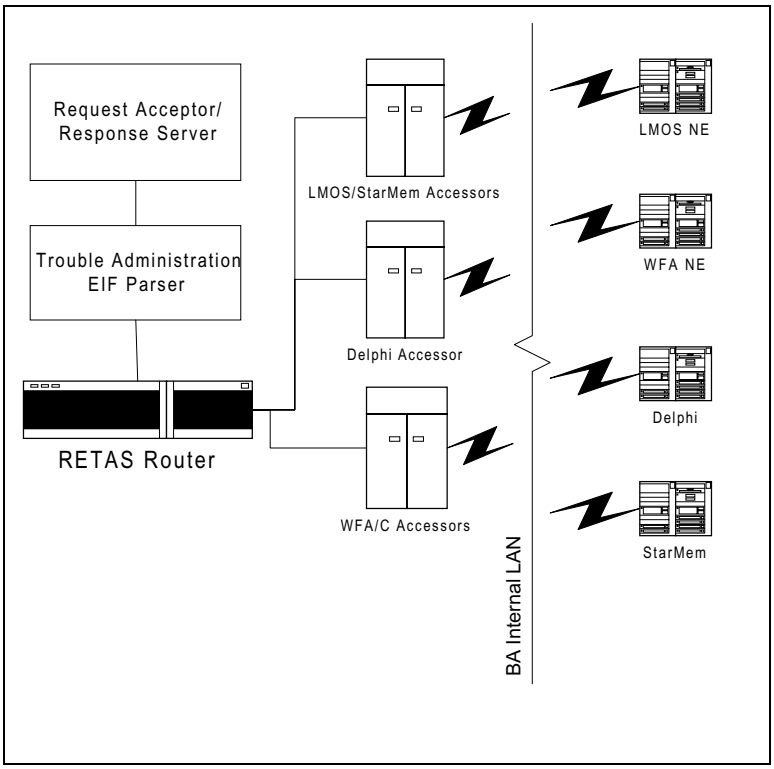
Process	Sub-Process	Evaluation Measure	Test Cross-Reference
Access to Test Capability	Initiate SARTS & Receive Test response	Document Usability	MR-1-4-2
Access to Test Capability	Initiate SARTS & Receive Test response	Parity with Bell Atlantic Retail	MR-1-5-2

2.3.1 RETAS Application

All states in Bell Atlantic use a single RETAS application; the current RETAS application is referred to as the phase III GUI. RETAS is a routing tool that accepts trouble administration messages, route requests to the appropriate Bell Atlantic core factory system for that state, and returns electronic responses. RETAS, per se, does not perform any M&R functions.

The following diagram highlights the functional components of RETAS:

Figure 1-1: RETAS Functional Components



Trouble administration messages enter RETAS via the Request Acceptor Module. The Electronic Interface Parser (EIF) performs field level validation by checking for the presence of required/conditional inputs and ensures the data has been provided in the correct format. The business objects module contains the routing intelligence needed to interact with Bell Atlantic's core factory systems via the three accessor modules (LMOS, WFA/C, Delphi).

RETAS interacts with Bell Atlantic core factory systems in a two step process. The first step is a security/validation process. In the security/validation step, the user's right to access the circuit is verified. If needed, the existence of a previously reported trouble is validated[79]. The second step is the submission of data to the core factory systems: LMOS, WFA/C, and Delphi.

2.3.2 Bell Atlantic-North Core Factory Systems

Bell Atlantic has separate core factory (backend) systems for the different territories in the Bell Atlantic-North region. For the purposes of M&R activity, Bell Atlantic's core factory is comprised of systems that support three categories of activities:

- Trouble administration systems for Plain Ordinary Telephone Service (POTS),
- Trouble administration systems for Special Circuits (Specials), and
- Test systems for fault identification (MLT & SARTS).

In Bell Atlantic-North terminology, Integrated Services Digital Network (ISDN), Centrex, Private Branch Exchange (PBX), INP and Local Number Portability (LNP) are considered POTS for maintenance purposes. Unbundled loops, Inter-Office Facilities (IOF), and unbundled signaling system 7 (SS7) are referred to as Specials.

Table 1-2 details the definitions, circuit type, product support and activity for the M&R Core Factory Systems for Bell Atlantic-North.

[79] These transactions are Modify, Status, Close and Service Recovery.

Table 1-2: Bell Atlantic-North Core Factory (Backend) Systems[80]

Core Factory Systems	Definition	Circuit Type	Product Support	M&R Activity
LMOS	Loop Maintenance Operating System	POTS	ISDN, Centrex, INP, LNP	Provides maintenance, tracking and dispatch functionality
WFA/C	Work Force Administration/Control System	Specials	Unbundled loops, IOF, unbundled SS7	Provides maintenance, tracking and dispatch functionality
Delphi	Connectivity to SARTS and Mechanized Loop Test	POTS & Specials	POTS and unbundled loops	Provides line/loop test functionality

2.3.3 RETAS Student Guides for CLECs and resellers

The RETAS Student Guides for CLECs (UNE, UNE-P) and Resellers are training/reference guides for students who enroll in BA-MA M&R training courses. BA-MA offers a three-day training class for CLECs (UNE, UNE-P) and a two-day training class for resellers at a cost of $250 per day.

2.4 Data Sources

The data collected for the test are summarized in the table below.

Table 1-3: Data Sources for RETAS Functional Evaluation

Document	File Name	Location in Work Papers	Source
RETAS Screen Prints	Hard Copy	MR-1-A	KPMG Consulting
Caseworker Interview Notes	Caseworker_BANorth.doc	MR-1-B-1	KPMG Consulting
RETAS Business Flows, Version 1 (Prepared by Beechwood Data Systems)	Hard Copy	MR-1-B-2	Bell Atlantic

[80] Source: RETAS Student User Guide (SUG).

Document	File Name	Location in Work Papers	Source
Caseworker Architecture Diagram	Hard Copy	MR-1-B-3	Bell Atlantic
Caseworker to LMOS/WFA-C Interface	Hard Copy	MR-1-B-4	Bell Atlantic
Caseworker to Delphi Interface	Hard Copy	MR-1-B-5	Bell Atlantic
LMOS Orientation Diagram	Hard Copy	MR-1-B-6	Bell Atlantic
Bell Atlantic Student User Guide for CLECs (March 2000)	Hard Copy	MR-1-C	Bell Atlantic
Bell Atlantic Student User Guide for resellers (Version 1.0C)	Hard Copy	MR-1-D	Bell Atlantic
Bell Atlantic Caseworker Manual	Hard Copy	MR-1-E	Bell Atlantic
GUI Help Desk	Online	N/A	Bell Atlantic

2.4.1 Data Generation/Volumes

Data generation to support the RETAS functional evaluation consists of records gathered through RETAS performing the following functions:

- Perform Mechanized Loop Test
- Perform SARTS Test
- Create Trouble Ticket
- Modify Trouble Ticket
- Status Trouble Ticket
- Close Trouble Ticket
- Perform Service Recovery

- Request Trouble Ticket History
- Request Trouble Ticket Extended History

2.5 Evaluation Methods

The following was the evaluation method for the RETAS Functional Evaluation Test. In Sub-test 1 the RETAS functions[81] were evaluated using the following steps:

1. RETAS Student Guides were reviewed to understand how each functional request should be processed using RETAS.
2. Paper forms were completed for each RETAS function. Additionally a transaction hierarchy was built so as to ensure that successful system responses were received and trouble reports were closed out before they were dispatched and worked upon by a Bell Atlantic technician. This procedure ensured that BA-MA operations were not disrupted.
3. Data from the forms completed in Step 2 was entered into RETAS and system responses were collected.
4. Edit rules for required and conditional fields were validated during the data-entry process.
5. RETAS transaction requests and responses were documented by taking screen prints.

RETAS was also exercised during the RETAS Performance Evaluation test (M&R2) and Maintenance and Repair Process Evaluation (M&R4).

For Sub-test 2, the M&R team visited the Caseworker development center in Silver Spring, Maryland. Bell Atlantic's Caseworker Manager was interviewed to gain understanding of the caseworker architecture and its functionality. A demonstration of the caseworker tool was observed. Finally, the caseworker manual was reviewed to form a basis for a comparison.

2.6 Analysis Methods

The RETAS Functional Evaluation included a checklist of evaluation criteria developed by the test manager during the initial phase of the Bell Atlantic-Massachusetts OSS Evaluation. These evaluation criteria, detailed in the *Master Test Plan*, provided the framework of norms, standards, and guidelines for the RETAS Functional Evaluation.

The data collected were analyzed employing the evaluation criteria referenced above.

3.0 Results Summary

This section identifies the evaluation criteria and test results.

[81] Trouble Create, Trouble Modify, Status Inquiry, Trouble Close, Trouble History, Extended Trouble History, Mechanized Loop Test, SARTS, Service Recovery.

3.1 Results & Analysis

The results of this test are presented in the tables below.

Table 1-4: M&R1 Evaluation Criteria and Results: Functional Evaluation

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-1-1-1	The user is able to conduct an MLT test using RETAS and receive a satisfactory response.	Satisfied	RETAS was used to conduct 21 MLTs and all responses were satisfactory.
MR-1-1-2	The User is able to conduct a SARTS test using RETAS and receive a satisfactory response.	Satisfied	RETAS was used to conduct 3 SARTS and 3 responses for the SARTS testable circuits were positive.
MR-1-1-3	The user is able to enter a trouble report using RETAS and receive a satisfactory response.	Satisfied	RETAS was used to create 27 trouble reports and 27 responses were satisfactory.
MR-1-1-4	The user is able to modify a trouble report using RETAS and receive a satisfactory response.	Satisfied	RETAS was used to modify 12 trouble reports and 12 responses were satisfactory.
MR-1-1-5	The user is able to check the status of a trouble report using RETAS and receive a satisfactory response.	Satisfied	RETAS was used to retrieve the status on 13 trouble tickets and 13 responses were satisfactory.
MR-1-1-6	The user is able to close/cancel a trouble report using RETAS and receive a satisfactory response.	Satisfied	RETAS was used to close 17 trouble tickets and 17 responses were satisfactory.
MR-1-1-7	The user is able to access historical trouble information using RETAS and receive a satisfactory response.	Satisfied	RETAS was used to retrieve 37 trouble ticket histories and 37 responses were satisfactory.
MR-1-1-8	The user is able to access extended historical trouble information using RETAS and receive a satisfactory response.	Satisfied	RETAS was used to request 14 extended trouble histories and 14 responses were satisfactory.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-1-1-9	The user is able to implement Service Recovery using RETAS and receive a satisfactory response.	Satisfied	RETAS was used for 2 Service Recovery requests and 2 responses were satisfactory.

Table 1-5: M&R1 Evaluation Criteria and Results: GUI/RETAS Timeliness Evaluation

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-1-2-1	The user receives timely acknowledgements and responses to MLT tests using RETAS.	Satisfied	Acknowledgements were received instantaneously. Responses required up to two minutes. This is consistent with the five minute time stipulated by the RETAS guide for CLECs, March 2000, pg. 3-9. Upon submitting an MLT transaction in RETAS, a user is notified via an "acknowledgement" that the GUI server has received the data. Once the transaction has been routed by RETAS to the core factory and processed, a "response" is returned via the same path to the GUI server. At that time, the acknowledgement is replaced by a response. Timeliness of acknowledgements is a function of the GUI front-end only. Timeliness of the responses is a function of the combined timeliness of the GUI front-end, RETAS and the specific BA-MA core factory exercised.
MR-1-2-2	The user receives timely acknowledgements and responses to SARTS test using RETAS.	Satisfied	Acknowledgements were received almost instantaneously. Responses required up to ten minutes. This is consistent with the twenty minutes stipulated by the RETAS Guide for Resellers, Version 1.0C.
MR-1-2-3	The user receives timely acknowledgements and responses when entering trouble reports using RETAS.	Satisfied	Acknowledgements were received almost instantaneously. Responses required up to one minute.

Test Cross-Reference	Evaluation Criteria	Result	Comments
			Timeliness of acknowledgements is a function of the GUI front-end only. Timeliness of the responses is a function of the combined timeliness of the GUI front-end, RETAS and the specific BA-MA core factory system utilized.
MR-1-2-4	The user receives timely acknowledgements and responses when modifying trouble reports using RETAS.	Satisfied	Acknowledgements were received almost instantaneously. Responses required up to a minute.
MR-1-2-5	The user receives timely acknowledgements and responses when checking the status on trouble reports using RETAS.	Satisfied	Acknowledgements were received almost instantaneously. Responses were received within a few seconds.
MR-1-2-6	The user receives timely acknowledgements and responses when closing/canceling trouble reports using RETAS.	Satisfied	Acknowledgements were received almost instantaneously. Responses were received within a few seconds. The Close/Cancel request needs to be initiated within a certain window of time from the time of the trouble creation. This time starts approximately three minutes after a trouble is reported and stops when the trouble report is "pushed out" of the system into a manual process. The response to a close/cancel request in cases where the trouble is in a manual process (pending dispatch) is also received within a few seconds of the request initiation.
MR-1-2-7	The user receives timely acknowledgements and responses when requesting historical trouble information using RETAS.	Satisfied	Acknowledgements to submissions were received almost instantaneously. Responses were received within a few seconds.
MR-1-2-8	The user receives timely acknowledgements and responses when requesting extended historical trouble information using RETAS.	Satisfied	Acknowledgements to submissions were received almost instantaneously. Responses were received within a few seconds.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-1-2-9	The user receives timely acknowledgements and responses when requesting a Service Recovery using RETAS.	Satisfied	Acknowledgements to submissions were received almost instantaneously. A service recovery request accesses the switch features and is implemented immediately. A response is received within a few seconds.

Table 1-6: M&R1 Evaluation Criteria and Results: RETAS Usability

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-1-3-1	RETAS is a user-friendly system for requesting MLT tests and receiving MLT test results.	Satisfied	The procedure for requesting an MLT and receiving results is clear and understandable. For requesting an MLT, all required fields are made available. Additionally, each required field can be highlighted in order to receive additional information. "Required," "conditional," or "optional" is indicated for each field. When receiving a response for an MLT, RETAS provides all customer information entered, error code information, and test results. An acknowledgement that the system was successfully able to issue a request for the MLT test is received immediately following the request. The MLT response is not received instantaneously as the system instructs the testing at the remote location of the facility being tested.
MR-1-3-2	RETAS is a user-friendly system for requesting SARTS tests and receiving SARTS test responses.	Satisfied	The procedure for requesting an SARTS test and receiving results is clear and understandable. For requesting a SARTS test, all required fields are made available. Additionally, each required field can be highlighted in order to receive additional information. "Required," "conditional," or "optional" is indicated for each field. When receiving a response for a SARTS test, RETAS provides all customer information entered, error code information, and test results.

Test Cross-Reference	Evaluation Criteria	Result	Comments
			An acknowledgement that the system was successfully able to issue a request for the SARTS test is received immediately following the request. The SARTS response is not received instantaneously as the system conducts the testing at the remote location of the facility.
MR-1-3-3	RETAS is a user-friendly system for entering trouble reports and receiving system responses.	Satisfied	The procedure for entering trouble reports and receiving results is clear and understandable. For entering trouble reports, all required fields are made available. Additionally, each required field can be highlighted in order to receive additional information. "Required," "conditional," or "optional" is indicated for each field. When receiving a response for an entered trouble report, RETAS provides all customer information entered and error code information. Information pertinent to bringing closure to the trouble is required. The system responses also provide feedback to the user regarding the request. The received time and date, commitment time and date and the trouble ticket number is also provided among other information that the user inputs while creating the request. In case of an error in the request message set, error messages are provided which guide the user towards correcting the errors. Online help is also available and points to appropriate points in the RETAS Student User Guide (SUG) for further information. Reasons for optional or conditional fields are also provided.
MR-1-3-4	RETAS is a user-friendly system for modifying trouble reports and receiving responses.	Satisfied	The modify request screen presents required, conditional, and optional fields. Online help is also available which points to appropriate points in the RETAS SUG for further information. Reasons for optional or conditional fields are also provided.

Test Cross-Reference	Evaluation Criteria	Result	Comments
			The system responses also provide feedback to the user regarding the request. The date/time received and commitment date/time are provided. In case of an error in the request message set, error messages are provided to guide the user towards correction.
MR-1-3-5	RETAS is a user-friendly system for requesting the status of trouble reports and receiving responses.	Satisfied	The status request screen presents required, conditional, and optional fields. Online help is also available which points to appropriate points in the RETAS SUG for further information. Reasons for optional or conditional fields are also provided. Only pertinent information such as the circuit ID, type of line, trouble originator and customer indicator are required fields. Other information such as trouble ticket number is optional.
MR-1-3-6	RETAS is a user-friendly system for closing/canceling trouble reports and receiving responses.	Satisfied	RETAS stipulates that trouble tickets can only be closed when in "screening" or "pending test," two stages through which the troubles "pass" quickly. This information is provided in the RETAS SUG, Section 3. For all other conditions, the customer must call Bell Atlantic to manually close tickets. The close/cancel request screen presents required, conditional, and optional fields. Online help is also available which points to appropriate points in the RETAS SUG for further information. Reasons for optional or conditional fields are also provided. Responses to the request are quickly received. In case the ticket is too far out in the system, the response will mention that the user needs to call the RCMC to close out the trouble.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-1-3-7	RETAS is a user-friendly system for requesting historical trouble information and receiving responses.	Satisfied	The trouble history request screen presents required, conditional, and optional fields. Online help is also available which points to appropriate points in the RETAS SUG for further information. Reasons for optional or conditional fields are also provided. Only pertinent information, such as circuit ID, type of line, and customer type (Reseller or CLEC) is collected. Optional and conditional fields are also limited to the pertinent information about a recent service order. Responses to the request are quickly received. Information presented to the user includes the date/time received, date/time cleared, date/time closed, trouble type code, disposition code, and cause code.
MR-1-3-8	RETAS is a user-friendly system for requesting extended historical trouble information and receiving responses.	Satisfied	The extended trouble history request screen presents required, conditional, and optional fields. Online help is also available which points to appropriate points in the RETAS SUG for further information. Reasons for optional or conditional fields are also provided. Only pertinent information, such as circuit ID, type of line, and customer type (Reseller or CLEC) is collected. Optional and conditional fields are also limited to the pertinent information about a recent service order. The responses are quickly received. Information presented to the user includes the date/time received, date/time cleared, date/time closed, trouble type code, disposition code, and cause code.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-1-3-9	RETAS is a user-friendly system for requesting service recovery and receiving a response.	Satisfied	The Service Recovery request screen presents required, conditional, and optional fields. Online help is also available which points to appropriate points in the RETAS SUG for further information. Reasons for optional or conditional fields are also provided. Several options for service recovery functionality are available. The user can forward the call to a different number, place a recorded message on the line, or make the line busy. The service recovery function is only available when the trouble is in either a "Pending Dispatch," or "Dispatched Out" state.

Table 1-7: M&R1 Evaluation Criteria and Results: Documentation Usability

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-1-4-1	Student Guides serve as an effective manual for using RETAS to conduct an MLT test.	Satisfied	Student User Guides provide adequate guidance to conduct an MLT and comprehend the response. Screen prints and/or explanation are provided for the following items: ♦ How to access MLT trouble ticket test ♦ MLT test input screen and data entry rules ♦ How to access MLT test responses ♦ MLT test result: metallic fault – UNE Port ♦ MLT test result
MR-1-4-2	Student Guides serve as an effective manual for using RETAS to conduct a SARTS test.	Satisfied	Student User Guides provide adequate guidance to conduct a SARTS test and comprehend the response. Screen prints and/or explanation are provided for the following items: ♦ Overview ♦ Initiating the request ♦ Delphi English diagnosis for SARTS test ♦ Test response

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-1-4-3	Student Guides serve as an effective manual for using RETAS to enter a trouble report.	Satisfied	Student User Guides provide adequate guidance to enter a trouble report and comprehend the response. Screen prints and/or explanation are provided for the following items: ♦ Override handle codes ♦ Trouble ticket create steps ♦ Additional trouble information fields ♦ Create request (this is provided for the product types specified) ♦ Product diagrams ♦ View response Student User Guides detail each step and also mentions required, conditional and optional fields. Screen prints are also provided to aid visual learning.
MR-1-4-4	Student Guides serve as an effective manual for using RETAS to modify a trouble report.	Satisfied	Student User Guides provide adequate guidance to modify a trouble report and comprehend the response. Screen prints and/or explanation are provided for the following items: ♦ Trouble ticket modify request ♦ Trouble ticket modify request and responses
MR-1-4-5	Student Guides serve as an effective manual for using RETAS to check the status of a trouble report.	Satisfied	Student User Guides provide adequate guidance to status a trouble report and comprehend the response. Screen prints and/or explanation are provided for the following items: ♦ Create ♦ View responses ♦ Response (serial format) ♦ Response (TN format) ♦ Response table (POTS) ♦ Response table (special services) Status codes that are received as part of the system response are explained.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-1-4-6	Student Guides serve as an effective manual for using RETAS to close/cancel a trouble report.	Satisfied	Student Guides provide adequate guidance to close/cancel a trouble report and comprehend the response. Screen prints and/or explanation are provided for the following items: ♦ Trouble ticket close – request ♦ Trouble ticket close – view response ♦ Trouble ticket close – response (TN format) ♦ Trouble ticket close – response (special services) ♦ Close-out table The close function in RETAS allows close-outs only in a limited window of time. The user guide details close responses and explains to the user when an automatic close-out is allowed.
MR-1-4-7	Student Guides serve as an effective manual for using RETAS to retrieve historical trouble information.	Satisfied	Student Guides provide adequate guidance to request circuit history and comprehend the response. Screen prints and/or explanation are provided for the following items: ♦ Trouble history – request ♦ Trouble history – view responses ♦ Trouble history – response (POTS) ♦ Trouble history – response (special services) The user guides also explains and references disposition and cause codes.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-1-4-8	Student Guides serve as an effective manual for using RETAS to retrieve extended historical trouble information.	Satisfied	Student Guides provide adequate guidance to request extended trouble history and comprehend the response. Requesting an "extended history" requires the same information as for a "history." Screen prints and/or explanation specific to extended history are provided for the following items: ♦ Extended trouble history request ♦ Extended trouble history view responses The user guides explains and references disposition and cause codes.
MR-1-4-9	Student Guides serve as an effective manual for using RETAS to initiate a service recovery.	Satisfied	Student Guides provide adequate guidance to enter a service recovery request and comprehend the response. Screen prints and/or explanation are provided for the following items: ♦ Trouble ticket service recovery request message set ♦ Initiating the request ♦ Reviewing responses ♦ "Undo service recovery"

Table 1-8: M&R1 Evaluation Criteria and Results: Parity Evaluation

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-1-5-1	RETAS and systems available to BA-MA retail RSCs provide equivalent MLT test functionality.	Satisfied	Caseworker and other systems available to Bell Atlantic Repair Service Clerks (RSCs) and RETAS provide equivalent functionality. Specifically, both require that the line cannot be in use during a test, take similar time to execute the test, and return an equivalent response.
MR-1-5-2	RETAS and systems available to BA-MA retail RSCs provide equivalent SARTS test functionality.	Satisfied	RETAS provides the CLECs the capability to test special circuits. However, this functionality is not available through Caseworker. Bell Atlantic RSCs must access the Delphi system directly.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-1-5-3	RETAS and systems available to BA-MA retail RSCs provide equivalent trouble entry functionality.	Satisfied	RETAS and Caseworker and other systems available to Bell Atlantic-North RSCs provide equivalent functionality. Trouble ticket creation requires the same information for both retail and wholesale systems.
MR-1-5-4	RETAS and systems available to BA-MA retail RSCs provide equivalent functionality for modifying a previously entered trouble report.	Satisfied	RETAS and Caseworker provide equivalent functionality for modifying an already reported trouble. Trouble ticket modification requires the same information for both wholesale and retail systems.
MR-1-5-5	RETAS and systems available to BA-MA retail RSCs provide equivalent functionality for checking the status of a previously entered trouble report.	Satisfied	RETAS and Caseworker provide equivalent functionality for checking on a status of a reported trouble. Checking the status of a trouble ticket requires the same information for both wholesale and retail systems.
MR-1-5-6	RETAS and systems available to BA-MA retail RSCs provide equivalent functionality for closing/canceling a previously entered trouble report.	Satisfied	RETAS and Caseworker provide equivalent functionality for closing out a reported trouble. Specifically, RETAS and Caseworker can only close/cancel tickets in "pending test" or "screening" state. Like the CLECs, the RSCs have to call up to manually close out a trouble once it has flowed through the system and is lying in a manual processing buffer.
MR-1-5-7	RETAS and systems available to BA-MA retail RSCs provide equivalent functionality for checking historical trouble information.	Satisfied	RETAS and Caseworker provide equivalent functionality for checking historical trouble information. The information required, and the historical information returned, is the same for both wholesale and retail systems.
MR-1-5-8	RETAS and systems available to BA-MA retail RSCs provide equivalent functionality for checking extended historical trouble information.	Satisfied	RETAS provides more functionality than Caseworker, the Bell Atlantic-North retail M&R system. Specifically, Caseworker provides historical information for a period of only up to 45 days whereas RETAS provides data for three years.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-1-5-9	RETAS and systems available to BA-MA retail RSCs provide equivalent functionality for service recovery.	Satisfied	RETAS and systems available with Bell Atlantic RSCs provide equivalent functionality for performing a service recovery operation. Performing a service recovery transaction requires the same information for both wholesale and retail systems. Although Caseworker does not have the capability to perform a service recovery request, RSCs can access StarMem to directly perform the request for service recovery. Additionally, to ensure that service recovery requests are only accepted for troubles with long repair lead times, Bell Atlantic trains RSCs to screen for frivolous service recovery requests. However, no system constraints are imposed on entering service recovery requests in the retail environment. However, for CLECs, Bell Atlantic instituted a "system" control to prevent frivolous service recovery requests. Trouble tickets must be in the "Pending Dispatch" or "Dispatched Out" state before a service recovery request can be entered. This system check limits CLEC service representative flexibility when compared to RSC flexibility.

B. Test Results: Repair Trouble Administration System (RETAS) Performance Evaluation (M&R2)

1.0 Description

The Repair Trouble Administration System (RETAS) Performance Evaluation is a transaction driven test designed to evaluate the behavior of the RETAS system and its interfaces under load conditions. The objective of the test is to test the responsiveness of the Bell Atlantic (BA) trouble administration system developed for Competitive Local Exchange Carriers (CLECs) during normal hour, peak hour, and stress load conditions.

The M&R2 test evaluated the RETAS responsiveness for the following transaction types:

Perform Mechanized Loop Test (MLT)
Perform Switched Access Remote Test System (SARTS) Test
Create Trouble Ticket
Modify Trouble Ticket
Close Trouble Ticket
Status Trouble Ticket
Request Trouble Ticket History
Request Trouble Ticket Extended History

The RETAS Performance evaluation test was conducted in two phases. In Phase I, RETAS responsiveness was measured for projected September 2000 normal hour, peak hour and stress load conditions. In Phase II, RETAS transactions were sent to the DCAS system to aid the DCAS performance test being conducted by the POP (Preorder, Order and Provisioning) domain. During Phase II, RETAS responsiveness was measured for projected December 2000 load for normal hour, peak hour and stress load conditions.

2.0 Methodology

This section summarizes the test methodology.

2.1 Business Process Description

All states in Bell Atlantic territory use a single RETAS application. The current RETAS application is referred to as the Phase III GUI. RETAS manages the transactional aspect of maintenance and repair by routing the trouble to the core factory systems and returning electronic responses. RETAS does not perform any physical maintenance and repair functions. These are administered by the Loop Maintenance Operating System (LMOS[82]) and the Work Force Administration System (WFA/C[83]), the Bell Atlantic core factory systems. Bell Atlantic built the RETAS Extranet to give Resellers and CLECs access to Bell Atlantic's legacy Maintenance and Repair (M&R) systems.

[82] LMOS, Loop Maintenance Operating System, is the M&R backend system for POTS circuits.
[83] WFA/C, Work Force Administration/Control System, is the M&R backend system for Special Circuits.

The RETAS front-end GUI is used for the following M&R transactions:

Perform Mechanized Loop Test
Perform SARTS Test
Create Trouble Ticket
Modify Trouble Ticket
Status Trouble Ticket
Close Trouble Ticket
Perform Service Recovery[84]
Request Trouble Ticket History
Request Trouble Ticket Extended History

2.2 Scenarios

Selected scenarios from the *Master Test Plan* were utilized during this evaluation.

2.3 Test Targets & Measures

The test target was RETAS, which provides CLECs access to Bell Atlantic's core factory M&R systems. Processes, sub-processes, evaluation measures, and associated test cross-reference numbers are summarized in the following table. The last column, "Test Cross-Reference," indicates where the particular measures are addressed in Section 3.1 "Results & Analysis."

Table 2-1: Test Target Cross-Reference

Process	Sub-Process	Evaluation Measure	Test Cross-Reference
Access to Test Capability	MLT Test	Performance under Normal Load, Performance under Peak Load, Performance under Stress Load	MR-2-1
Access to test Capability	SARTS Test	Performance under Normal Load, Performance under Peak Load, Performance under Stress Load	MR-2-2
Trouble Reporting	Create Trouble Ticket	Performance under Normal Load, Performance under Peak Load, Performance under Stress Load	MR-2-3

[84] Successful Service Recovery Transactions need trouble tickets to be in a Dispatch Out (DO) state. Because the dispatching of technicians was avoided during the RETAS performance evaluation, the Service Recovery function was not part of the volume test.

Process	Sub-Process	Evaluation Measure	Test Cross-Reference
Access to test Capability	Modify Trouble Ticket	Performance under Normal Load, Performance under Peak Load, Performance under Stress Load	MR-2-4
Access to test Capability	Status Trouble Ticket	Performance under Normal Load, Performance under Peak Load, Performance under Stress Load	MR-2-5
Access to test Capability	Close Trouble Ticket	Performance under Normal Load, Performance under Peak Load, Performance under Stress Load	MR-2-6
Trouble History Access	Access Trouble History	Performance under Normal Load, Performance under Peak Load, Performance under Stress Load	MR-2-7
Trouble History Access	Access Extended Trouble History	Performance under Normal Load, Performance under Peak Load, Performance under Stress Load	MR-2-8

2.3.1 RETAS Front-end and the Automated Scripting tool

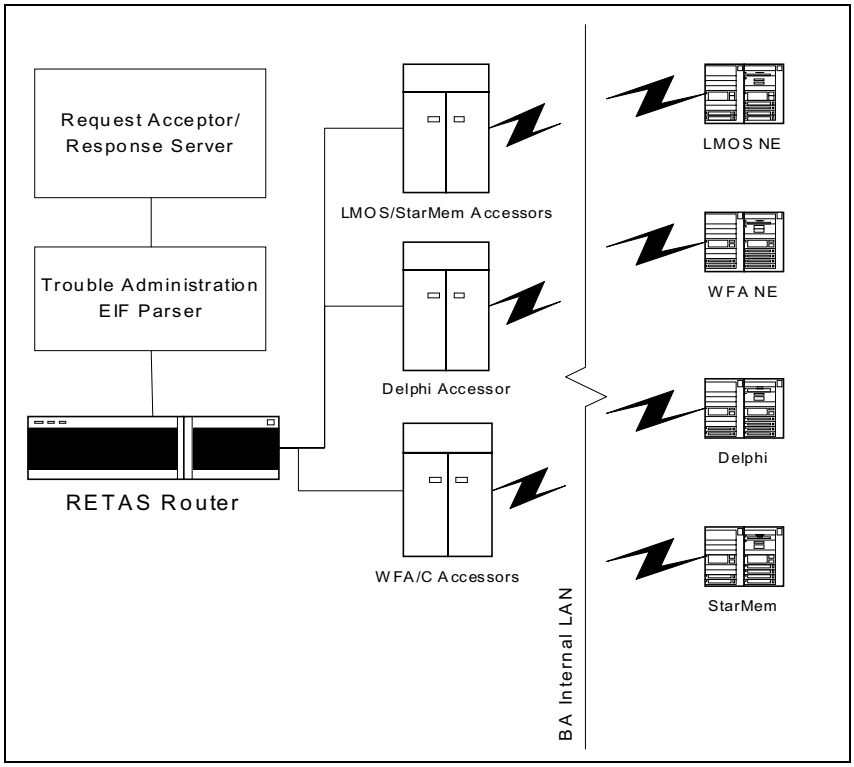
The RETAS design does not allow for dynamic real-time responses. Instead, responses are stored in a buffer on the Bell Atlantic server. An additional query instruction is required to retrieve responses for viewing at the CLEC workstation.

Interaction with the RETAS GUI interface was automated using a scripting tool created by the test manager. The scripting tool consists of a software program developed using the Rational Rose Corporation's SQA Suite and instructions/data tables stored in a Microsoft Access database file. From a functional perspective, the SQA program polls the instruction table for a transaction, collects the required information from the data tables, and transmits it to RETAS at a pre-defined rate.

2.3.2 RETAS Application

Because wholesale customers share RETAS, Bell Atlantic has incorporated several layers of security to limit unauthorized use and preserve data confidentiality. At the user level, RETAS limits access to persons with a valid User ID, and password. An additional level of security validates each RETAS transaction to partition the transactions for individual CLECs. The following diagram highlights the functional components of RETAS:

Figure 2-1: RETAS Functional Components



Trouble administration messages enter RETAS via the Request Acceptor Module. The Electronic Interface Parser (EIF) performs field level validation by checking for the presence of required/conditional inputs and ensures the data has been provided in the correct format. The business objects module contains the routing intelligence needed to interact with Bell Atlantic's core factory systems via three accessor modules (LMOS, WFA/C, Delphi).

RETAS interacts with Bell Atlantic core factory systems in two process steps. First, the security/validation step for user access rights to circuit is verified. If needed, the existence of a previously reported trouble is checked for those transaction requests, which require the existence of a previously reported trouble.[85] Second, data to core factory systems is submitted (i.e., LMOS, WFA/C, and Delphi).

2.3.3 Bell Atlantic-North Core Factory Systems

Bell Atlantic has separate core factory (backend) systems for the different territories in the Bell Atlantic-North region. For the purposes of M&R activity, Bell Atlantic's core factory is comprised of systems that support three categories of activities:

- Trouble administration systems for Plain Ordinary Telephone Service (POTS),
- Trouble administration systems for Special Circuits (Specials), and
- Test systems for fault identification (MLT & SARTS).

In Bell Atlantic-North terminology, Integrated Services Digital Network (ISDN), Centrex, Private Branch Exchange (PBX), INP and Local Number Portability (LNP) are considered POTS for maintenance purposes. Unbundled loops, Inter-Office Facilities (IOF), and unbundled signaling system 7 (SS7) are referred to as Specials.

Table 2-2 details the definitions, circuit type, product support and activity for the M&R Core factory Systems for Bell Atlantic-North.

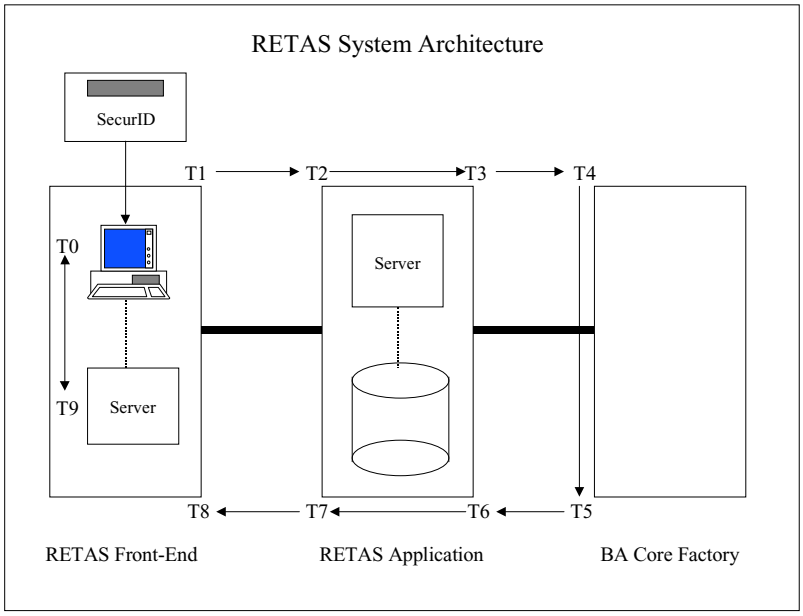
Table 2-2: Bell Atlantic-North Core Factory (Backend) Systems[86]

Core Factory Systems	Definition	Circuit Type	Product Support	M&R Activity
LMOS	Loop Maintenance Operating System	POTS	ISDN, Centrex, INP, LNP	Provides maintenance, tracking and dispatch functionality
WFA/C	Work Force Administration/Control System	Specials	Unbundled loops, IOF, unbundled SS7	Provides maintenance, tracking and dispatch functionality
Delphi	Connectivity to SARTS and Mechanized Loop Test	POTS & Specials	POTS and unbundled loops	Provides line/loop test functionality

[85] These transactions are Modify, Status, and Close.
[86] Source: RETAS Student User Guide (SUG).

2.3.4 RETAS Processing and Response Time Intervals

Figure 2-2: Time Intervals Associated with RETAS Transaction Processing



From a user perspective, trouble administration using RETAS is a two step process. In the first step, transactions are submitted to the Bell Atlantic-North Core Factory Systems using the RETAS front-end, and a response is returned to the front end Web server (T1T8) as illustrated in the above diagram. Next, a separate "query" instruction is used to retrieve responses from the Web server (T0T9).

Time T1T8 is a function of the combined responsiveness of all M&R systems (RETAS front-end, RETAS and Bell Atlantic-North core factory) and the connectivity between them. Since the goal of the M&R2 test is to measure the performance of RETAS itself: the time for the test is defined as time T2T7 and not time T1T8. Time T2T7, which is the interval from receipt of an instruction by RETAS to exit of a response from RETAS, is used to calculate metrics that are publicly reported by BA-MA. This is an appropriate measure of performance under the following assumptions:

- Circuits that provide connectivity between RETAS and the Bell Atlantic-North core factory have sufficient capacity and are scalable. Consequently, they are not a source of delay during testing. Under this condition, times T5T6 and T3T4 are constant and independent of transaction volume.
- The responsiveness of the Bell Atlantic-North core factory (T4T5) is unaffected by wholesale volumes which account for only a small percentage of total M&R volumes (retail and wholesale).

- Time T0T9 need not be evaluated in M&R2 because this time depends on the connectivity option selected by Bell Atlantic's wholesale customers. CLECs can use dial-up, 56 KBPS or T-1 circuits to connect the web client and the web server.

2.4 Data Sources

The BA-MA Project Lead for Trouble Administration was the test manager's point of contact for M&R2. The BA-MA Project Lead for Trouble Administration provided the test manager with User ID's and Secure ID's required for connecting to RETAS. The BA-MA Project Lead also provided data for calculating the Trouble Report rate for CLEC troubles, the RETAS transaction mix and the BA-MA forecasts of CLEC installed lines.

The Project Lead also coordinated the capture of response data with Beechwood Data Systems.[87]

The data collected for the test are summarized in the table below.

Table 2-3: Data Sources for RETAS Performance Evaluation

Document	File Name	Location in Work Papers	Source
Bell Atlantic RETAS Transaction mix	9904-9906 RETAS Data.xls	MR-2-A-1	Bell Atlantic
Bell Atlantic Volume Forecast Data	Forcstbymthstatesph.xls Dataresponse.xls	MR-2-A-2	Bell Atlantic
Bell Atlantic Volume Forecast Analysis	Vol_forecast.xls	MR-2-A-3	KPMG Consulting
Bell Atlantic Trouble Report Rate for MA	TroubleReportRate.xls RptratPHcalc2kpmg.xls	MR-2-A-4	Bell Atlantic
Bell Atlantic Trouble Report Rate for MA and Bell Atlantic-North	MemoTroubleReportRate.doc	MR-2-A-5	KPMG Consulting
Bell Atlantic Trouble Report Rate for Bell Atlantic-North	TroubleReportRateForBANorth.zip	MR-2-A-6	Bell Atlantic

[87] Beechwood Data Systems developed and maintains RETAS for Bell Atlantic.

Document	File Name	Location in Work Papers	Source
Bell Atlantic RETAS Security & handle code instructions	RE. Data Request.rtf Dt. April 6, 2000 RE. Data Request.rtf Dt. June 22, 2000 VolAnalysis.xls Activity_log_desc91216.doc	MR-2-A-7	Bell Atlantic
Bell Atlantic Retail Caseworker Data	PA_MA_R2_CW_RETAS_ DAILY_2000_FEB.xls	MR-2-B-1	Bell Atlantic
Bell Atlantic Retail Caseworker Data Analysis	Caseworker by Day.xls	MR-2-B-2	KPMG Consulting
Bell Atlantic RETAS Data for Security Interval	Tx000217activity.xls Tx000218activity.xls Tx000222activity.xls Tx000223activity.xls Day000526activityprod.xls Day000531activityprod.xls Day000602activityprod.xls Day000606activityprod.xls	MR-2-B-3	Bell Atlantic
Bell Atlantic RETAS Security Interval Analysis	Security_interval_Sept.xls Security_interval_Dec.xls	MR-2-B-4	KPMG Consulting
Bell Atlantic RETAS Transaction Data - September and December	Tx000217info.xls Tx000218info.xls Tx000222info.xls Tx000223info.xls day000526info.xls day000531info.xls day000602info.xls day000506info.xls	MR-2-B-5	Bell Atlantic

Document	File Name	Location in Work Papers	Source
Bell Atlantic RETAS Data Analysis –September and December	Anal_Normal_Day1_Sept.xls Anal_Normal_Day2_Sept.xls Anal_PeakDay_Sept.xls Anal_StressDay_Sept.xls Anal_Normal_Day1_Dec.xls Anal_Normal_Day2_Dec.xls Anal_PeakDay_Dec.xls Anal_StressDay_Dec.xls	MR-2-B-6	KPMG Consulting
Statistical Analysis and Calculations	Permutation Test For XHist Response Time.xls Permutation Test for X History.doc Permutation Test for SARTS Response Time.xls Permutation Test For SARTS Response Time.doc Charts for SARTS Special Stress Test Response Time.xls HyperGeometric Test for SARTS Special Success Rate.xls History Status t test.xls	MR-2-B-7	KPMG Consulting

2.4.1 Data Generation/Volumes

The scripting tool was used to submit transactions at projected September and December 2000 normal, peak and stress loads. Measurements were collected by the test manager and by Beechwood.

For the purposes of this test, each day is defined to consist of 11 normal hours and one peak hour. A peak hour corresponds to a transaction flow rate that is 1.5X the normal flow rate.

In an ideal test environment, a stress test would evaluate system performance under exponentially increasing transaction volumes to the point of failure. Since RETAS testing was conducted in a production environment, the test manager scaled the projected September and December 2000 normal hour volume by a factor of 2.4 for the stress test. The following table summarizes the different load conditions tested in M&R2.

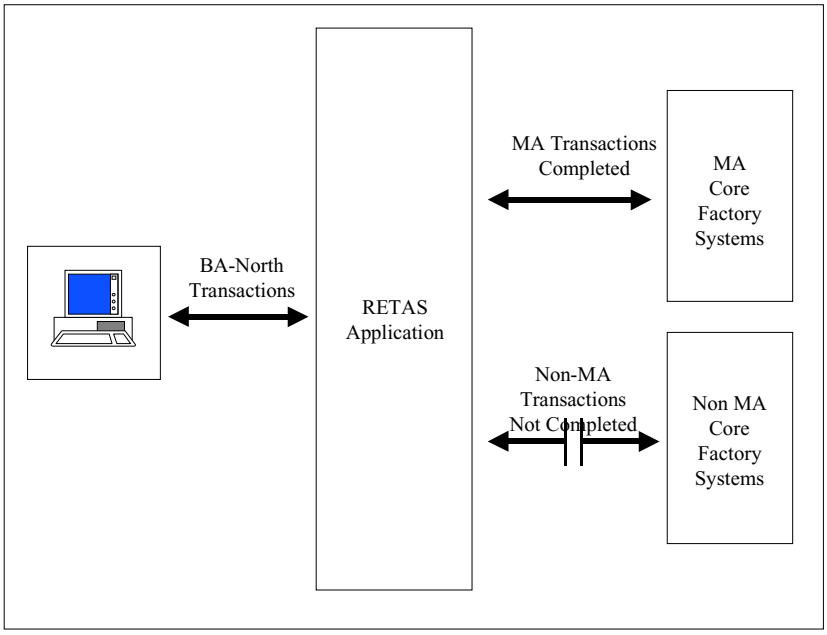
Table 2-4: RETAS Load Conditions

Load Condition	Definition
Normal Hour Load	Load based on Projected September/December 2000 Normal Hour
Peak Hour Load	Load based on 1.5 X September/December 2000 Normal Load
Stress Load	Load Based on 2.4 X September/December 2000 Normal Load

The RETAS application is shared by all states in Bell Atlantic-North. Transactions entering the RETAS application are then routed to core factory systems for each state. Hence, in order to simulate volume for BA-MA, the test manager also simulated volume entering the Bell Atlantic-North RETAS gateway. Only BA-MA transactions were sent in to the core factory systems. The Bell Atlantic-North transactions were stopped from further accessing the core factory systems.

The test manager used this approach to include the potential impact of transactions submitted by other states on RETAS performance for Massachusetts.

Figure 2-3: Bell Atlantic-North Impact on BA-MA RETAS Performance



2.4.1.1 September 2000 Normal Hour Load Calculation

Using BA-MA estimates, the test manager projected the September 2000 installed base of wholesale POTS and Specials Circuits as shown in Table 2-5:

Table 2-5: Projected September 2000 Installed Base

	MA (000s)	Non-MA (000s)	Bell Atlantic-North (000s)
POTS (LMOS)	333.1	1079.7	1412.8
Specials (WFA/C)	44.8	104	148.8
Total	377.9	1183.7	1561.6

Based on an average trouble report rate[88] of 1% (1 trouble per 100 lines per month) for POTS circuits, POTS circuits in Massachusetts will generate 3.33K (333.1 x .01) trouble reports per month. A trouble report rate of 0.94% for Specials circuits will generate .421K (44.8 x .0094) reports per month for Specials circuits. Under the assumption that 90% of all troubles occur during the 22 weekdays in the average month, the calculated number of daily reports is 137 (3.33 x 1000 x 0.9/22) for POTS and 18 (.421 x 1000 x 0.9/22) for Specials.

Over a 12-hour day consisting of 11 normal hours and one peak hour at 1.5 times the normal hour volume, the calculated normal trouble report rate is 11/hour (137/12.5) for POTS and 2/hour (18/12.5) for Specials for Massachusetts. For Bell Atlantic-North, the total trouble report rate is 46 for POTS and 6 for Specials. These figures are summarized in the following table:

Table 2-6: September 2000 Normal Trouble Report Rate

	MA	Non-MA	Bell Atlantic-North
POTS (LMOS)	11	35	46
Specials (WFA/C)	2	4	6
Total	13	39	52

Creating trouble tickets is only one part of the larger mix of transactions. For POTS circuits, BA-MA's reported RETAS data shows that *create trouble tickets* account for 29.9% of all transactions, or for each *create* 2.34 other transactions are generated. Due to the low level of M&R activity for Specials, similar statistics for WFA/C are unavailable. The test manager also used the same transaction mix as POTS for Specials testing.

[88] Trouble Report Rates are based on Bell Atlantic data reported to the FCC.

In resale, customers purchase entire circuits from BA-MA and use Bell Atlantic's test-tools because they guarantee test reliability. In the UNE environment, customers create circuits by combining unbundled network elements purchased from BA-MA with their own facilities. In this case, BA-MA will not guarantee test reliability, prompting CLECs to use their own proprietary test systems. Therefore, the UNE mix will not include any Mechanized Loop Test transactions. The test manager modified the transaction mix for UNE-P circuits as illustrated in the following table:

Table 2-7: M&R Transaction Mix

	Resale		UNE-P	
	% of Total (figures in %)	Ratio of Transaction to Create transaction	% of Total (figures in %)	Ratio of Transaction to Create transaction
Create	26.3	1.00	41.2	1.00
MLT	36.1	1.37	N/A[89]	
SARTS	0.0	0.00		
Status	13.4	0.51	21.0	0.51
Modify	0.8	0.03	1.2	0.03
Close	0.3	0.01	0.4	0.01
History	11.6	0.44	18.1	0.44
X History[90]	11.6	0.44	18.1	0.44
Total	100.0	3.80	100.0	2.43

Applying the ratios in Table 2-7: M&R Transaction Mix to the trouble report numbers developed in Table 2-6: September 2000 Normal Hour Trouble Report Rate yields the Table 2-8:

Table 2-8: Calculated September 2000 Normal Hour Load

	MA		Non-MA		Bell Atlantic-North	
	POTS[91]	**Specials[92]**	**POTS**	**Specials**	**POTS**	**Specials**
Create	11	2	35	4	46	6

89 As stated in the CLEC Handbook Volume III, Section 8.3, SARTS and MLT Tests are not applicable for UNE accounts as Bell Atlantic does not own the entire networking architecture and the tests are not considered a reliable method of locating faults on a circuit.

90 The test manager used the assumption that the number of requests for History and Extended History are the same.

91 SARTS tests are not applicable for POTS.

92 MLT tests are not applicable for Specials.

	MA		Non-MA		Bell Atlantic-North	
	POTS[91]	Specials[92]	POTS	Specials	POTS	Specials
MLT	12	N/A	25	N/A	37	N/A
SARTS	N/A	3	N/A	2	N/A	5
Status	6	1	17	1	23	2
Modify	0	0	1	0	1	0
Close	0	0	0	0	0	0
History	5	1	15	2	20	3
X History	5	1	15	2	20	3
Total	39	8	108	11	147	19

During the test, the number of Massachusetts POTS *close* transactions were made equal to the number of *create* transactions so as to prevent dispatch of Bell Atlantic technicians. In addition, the test manager made an adjustment so that a minimum of one *modify* transaction is submitted each hour. Table 2-9 reflects these adjustments.

Table 2-9: Adjusted September 2000 Normal Hour Load

	MA		Non-MA		Bell Atlantic-North	
	POTS	Specials	POTS	Specials	POTS	Specials
Create	11	2	35	4	46	6
MLT	12	N/A	25	N/A	37	N/A
SARTS	N/A	3	N/A	2	N/A	5
Status	6	1	17	1	23	2
Modify	1	1	1	1	2	2
Close	11	1	1	1	12	2
History	5	1	15	2	20	3
X History	5	1	15	2	20	3
Total	51	10	109	13	160	23

2.4.1.2 September 2000 Peak Hour Load and Stress Load

As stated earlier, peak hour load is defined as 1.5X normal hour load, and stress load is defined as 1.5X peak hour load. Therefore, multiplying the entries in Table 2-9: September 2000 Normal Hour Transactions by 1.5 yields the peak hour rate, and multiplying the same entries by 2.4 yields the stress load.

2.4.1.3 RETAS Performance Evaluation during DCAS Performance Testing

The RETAS Performance test was also conducted to aid the DCAS Performance Test. Transactions were submitted at December 2000 normal hour, peak hour, and stress loads. Since the test was designed to aid the DCAS Performance test at the DCAS server, the transactions were not sent beyond the RETAS gateway.[93]

2.4.1.4 December 2000 Normal Hour Load Calculation

Using BA-MA estimates, the test manager projected the December 2000 installed base of wholesale POTS and Specials Circuits as shown in the Table 2-10:

Table 2-10: Projected December 2000 Installed Base

	MA (000s)	Non-MA (000s)	Bell Atlantic-North (000s)
POTS (LMOS)	357	1162.9	1519.9
Specials (WFA/C)	48.1	115.1	163.2
Total	405.1	1278	1683.1

Based on an average trouble report rate of 1% (1 trouble per 100 lines per month) for POTS circuits, POTS circuits in Massachusetts will generate 3.57K (357 x .01) trouble reports per month. A trouble report rate of 0.94% for Special circuits will generate .452K (48.1 x .0094) trouble reports per month. Under the assumption that 90% of all troubles occur during the 22 weekdays in the average month, the calculated number of daily reports is 146 (3.57 x 1000 x 0.9/22) for POTS and 19 (.452 x 1000 x 0.9/22) for Specials.

Over a 12-hour day consisting of 11 normal hours and one peak hour at 1.5 times the normal hour volume, the calculated normal trouble report rate is 12/hour (146/12.5) for POTS and 2/hour (19/12.5) for Specials for Massachusetts. For Bell Atlantic-North the total trouble report rate is 47 for POTS and 6 for Specials. These figures are summarized in the following table:

Table 2-11: December 2000 Normal Trouble Report Rate

	MA	Non-MA	Bell Atlantic-North
POTS (LMOS)	12	35	47
Specials (WFA/C)	2	4	6
Total	14	39	53

[93] RETAS gateway is the Request Acceptor of the RETAS Application. MLT and SARTS transactions were sent to the Bell Atlantic backend systems (Delphi Accessor).

As stated in section 2.4.1.1, c*reating* trouble tickets is only one part of the larger mix of transactions. For POTS circuits, BA-MA's RETAS data for April, 1999 through June, 1999 shows that *create trouble tickets* account for 29.9% of all transactions, or that for each trouble ticket *created,* 2.34 other transactions are generated. Similar statistics for WFA/C are unavailable. The test manager used the same transaction mix as POTS for Specials testing.

In resale, customers purchase entire circuits from BA-MA and use BA-MA's test-tools because BA-MA guarantees test reliability. In the UNE environment, customers create circuits by combining unbundled network elements purchased from BA-MA with their own facilities. In this case, BA-MA will not guarantee test reliability, prompting CLECs to use their own proprietary test systems. Therefore, the UNE mix will not include any MLT transactions. As a result, the test manager modified the transaction mix for UNE-P circuits as illustrated in the Table 2-12.

Table 2-12: M&R Transaction Mix

	Resale		UNE-P	
	% of Total (figures in %)	Ratio of Transaction to Create Transaction	% of Total (figures in %)	Ratio of Transaction to Create Transaction
Create	26.3	1.00	41.2	1.00
MLT	36.1	1.37	N/A[94]	
SARTS	0.0	0.00		
Status	13.4	0.51	21.0	0.51
Modify	0.8	0.03	1.2	0.03
Close	0.3	0.01	0.4	0.01
History	11.6	0.44	18.1	0.44
X History[95]	11.6	0.44	18.1	0.44
Total	100.0	3.80	100.0	2.43

Applying the ratios in Table 2-12: M&R Transaction Mix to the trouble report numbers developed in Table 2-11: December 2000 Normal Hour Trouble Report Rate yields the following table:

[94] As stated in the CLEC Handbook Volume III, Section 8.3, SARTS and MLT Tests are not applicable for UNE accounts as Bell Atlantic does not own the entire networking architecture and the tests are not considered a reliable method of locating faults on a circuit.

[95] The test manager used the assumption that the number of requests for History and Extended History are the same.

Table 2-13: Calculated December 2000 Normal Hour Load

	MA		Non-MA		Bell Atlantic-North	
	POTS[96]	Specials[97]	POTS	Specials	POTS	Specials
Create	12	2	35	4	47	6
MLT	12	N/A	26	N/A	38	N/A
SARTS	N/A	4	N/A	2	N/A	6
Status	6	1	18	1	24	2
Modify	0	0	1	0	1	0
Close	0	0	0	0	0	0
History	5	1	16	2	21	3
X History	5	1	16	2	21	3
Total	40	9	112	11	152	20

As stated earlier, during the test, the number of MA POTS *close* transactions were made equal to the number of *create* transactions to prevent dispatch of BA-MA technicians. Also, the test manager made an adjustment to the normal hour load so that a minimum of one *modify* transaction is submitted each hour. Table 2-14 reflects the adjustment.

Table 2-14: Adjusted December 2000 Normal Hour Load

	MA		Non-MA		Bell Atlantic-North	
	POTS	Specials	POTS	Specials	POTS	Specials
Create	12	2	35	4	47	6
MLT	12	N/A	26	N/A	38	N/A
SARTS	N/A	4	N/A	2	N/A	6
Status	6	1	18	1	24	2
Modify	1	1	1	1	2	2
Close	11	1	1	1	12	2
History	5	1	16	2	21	3
X History	5	1	16	2	21	3
Total	52	11	113	13	165	24

[96] SARTS tests are not applicable for POTS.
[97] MLT tests are not applicable for Specials.

2.4.1.5 December 2000 Peak Hour Load and Stress Load

As stated earlier, peak hour load is defined as 1.5X normal hour load, and stress load is defined as 1.5X peak hour load. Therefore, multiplying the entries in Table 2-14: December 2000 Normal Hour Transactions by 1.5 yields the peak hour rate, and multiplying the same entries by 2.4 yields the stress load.

2.5 Evaluation Methods

The following was the evaluation method for the RETAS Performance Evaluation Test.

1. RETAS transaction volume was calculated based on projections for September and December 2000 RETAS loads. *The transaction volume calculations are explained in Section 2.4.1 of this report.*
2. The scripting tool used by the test manager was populated and transactions were sent to the RETAS application server.
3. RETAS responses and response times were captured and analyzed.
4. Response times from the Performance Evaluation times were compared to Bell Atlantic Retail data.

2.6 Analysis Methods

The RETAS Performance Evaluation included a checklist of evaluation criteria developed by the test manager during the initial phase of the Bell Atlantic-Massachusetts OSS Evaluation. These evaluation criteria, detailed in the *Master Test Plan*, provided the framework of norms, standards, and guidelines for the RETAS Performance Evaluation.

The data collected from volume testing were analyzed employing the evaluation criteria referenced above.

3.0 Results Summary

This section identifies the evaluation criteria and test results.

3.1 Results & Analysis

The results of this test are presented in the table below.

Table 2-15: M&R2 Evaluation Criteria and Results

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-2-1	**MLT** Performance does not degrade under normal hour load. Performance does not degrade under peak hour load. Performance does not degrade under stress load.	Satisfied	POTS: Increasing load has no effect on success rate or response time. Specials: N/A
MR-2-2	**SARTS** Performance does not degrade under normal hour load. Performance does not degrade under peak hour load. Performance does not degrade under stress load.	Satisfied	Specials: Success rate declined from 98% for Normal Hour to 91% for Peak Hour and to 85% for Stress testing. Statistical tests[98] on the success rate indicate no significant degradation when comparing normal day load to peak day and comparing peak day load to stress load. Statistical tests[99] do not show significant degradation while comparing response times for normal day to peak day and peak day to stress day. POTS: N/A
MR-2-3	**Create** Performance does not degrade under normal hour load. Performance does not degrade under peak hour load. Performance does not degrade under stress load.	Satisfied	POTS: Increasing load has no effect on success rate or response time. Specials: Increasing load has no effect on success rate or response time.

[98] The test manager performed a Hypergeometric test that compares success rate proportions.
[99] The test manager performed a Permutation test that is a comparison test on averages.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-2-4	**Modify** Performance does not degrade under normal hour load. Performance does not degrade under peak hour load. Performance does not degrade under stress load.	Satisfied	POTS: Increasing load has no effect on success rate or response time. Specials: Increasing load has no effect on success rate or response time.
MR-2-5	**Status** Performance does not degrade under normal hour load. Performance does not degrade under peak hour load. Performance does not degrade under stress load.	Satisfied	POTS: Increasing load has no effect on success rate or response time. Specials: Increasing load has no effect on success rate or response time.
MR-2-6	**Close** Performance does not degrade under normal hour load. Performance does not degrade under peak hour load. Performance does not degrade under stress load.	Satisfied	POTS: Increasing load has no effect on success rate or response time. Specials: Increasing load has no effect on success rate or response time.
MR-2-7	**History** Performance does not degrade under normal hour load. Performance does not degrade under peak hour load. Performance does not degrade under stress load.	Satisfied	POTS: Increasing load has no effect on success rate or response time. Specials: Increasing load has no effect on success rate or response time.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-2-8	**Extended History** Performance does not degrade under normal hour load. Performance does not degrade under peak hour load. Performance does not degrade under stress load.	Satisfied	POTS: Increasing load has no direct effect on response time. Volume testing creates multiple trouble tickets against singular accounts. As load increases from normal to peak, and peak to stress, the volume of trouble history requested by the extended history command increases. As a result, the amount of time required to receive a response for the extended history increases corresponding to the size of the file requested. Specials: Increasing load has no effect on success rate or response time.

3.2 Additional Results

This section details the transaction results.

3.2.1 Transaction Analysis

The detailed results of this test are presented in the following two tables.

The first Table 2-16: BA-MA RETAS Performance (Successful (S) vs. Unsuccessful (U)) summarizes successful and unsuccessful transactions for September and December 2000 normal hour, peak hour and stress load for Massachusetts. The table reports numbers for BA-MA transactions only and does not have non-BA-MA transaction numbers.

Table 2-16: BA-MA RETAS Performance (Successful vs. Unsuccessful)

RETAS Mask	POTS						Specials					
	Normal		Peak		Stress		Normal		Peak		Stress	
	S	% S	S	% S	S	% S	S	% S	S	% S	S	% S
	U	% U	U	% U	U	% U	U	% U	U	% U	U	% U
Create	32	100	29	100	24	100	22	100	18	100	24	100
	0	0	0	0	0	0	0	0	0	0	0	0
MLT	205	95	98	100	113	100	N/A					
	11	5	0	0	0	0						
SARTS	N/A						40	98	32	91	23	85
							1	2	3	9	4	15
Status	22	100	17	100	24	100	22	100	18	100	23	100
	0	0	0	0	0	0	0	0	0	0	0	0

RETAS Mask	POTS						Specials					
	Normal		Peak		Stress		Normal		Peak		Stress	
	S	% S	S	% S	S	% S	S	% S	S	% S	S	% S
	U	% U	U	% U	U	% U	U	% U	U	% U	U	% U
Modify	22	100	17	100	24	100	22	100	18	100	23	100
	0	0	0	0	0	0	0	0	0	0	0	0
Close	31	97	20	100	23	100	22	100	18	100	23	100
	1	3	0	0	0	0	0	0	0	0	0	0
History	12	100	8	100	12	100	22	100	18	100	23	100
	0	0	0	0	0	0	0	0	0	0	0	0
X History	19	90	15	100	21	91	22	100	18	100	23	100
	2	10	0	0	2	9	0	0	0	0	0	0

S – Successful, U - Unsuccessful

The second Table 2-17: BA-MA RETAS Performance (Average and Standard Deviation) summarizes the average response time and standard deviation observed during the September and December 2000 normal hour, peak hour and stress load for Massachusetts.

Table 2-17: BA-MA RETAS Performance (Average and Standard Deviation)

RETAS Mask	POTS (Seconds)						Specials (Seconds)					
	Normal		Peak		Stress		Normal		Peak		Stress	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Create	8	1	8	1	8	1	3	1	3	1	2	1
MLT	70	15	71	13	70	13	N/A					
SARTS	N/A						178	79	176	60	195	59
Status	9	1	8	0	8	1	1	0	3	1	3	0
Modify	5	1	4	1	5	1	3	1	3	1	3	0
Close	12	1	11	1	11	1	3	1	3	1	3	0
History	10	1	10	1	10	1	2	1	1	0	2	0
X Hist	22	4	32	9	36	6	2	1	2	0	2	0

3.2.2 Transaction Analysis Summary

MLT: Transaction success rate is 95% for normal hour, 100% for peak hour and stress loads. The lower success rate for the normal hour is due to one test circuit that produced a consistent error code (6070). The error was however not repeated on the peak hour and the stress load test for the same circuit.

SARTS: Transaction success rate is 98% for normal hour, 91% for peak hour and 85% for stress loads.

Create: Transaction success rate is 100% for normal hour, peak hour and for stress loads for both POTS and Specials.

Modify: Transaction success rate is 100% for normal hour, peak hour and for stress loads for both POTS and Specials.

Status: Transaction success rate is 100% for normal hour, peak hour and for stress loads for both POTS and Specials.

Close: Transaction success rate for POTS is 97% for normal hour and 100% for peak hour and for stress loads. For Specials, the transaction success rate is 100% for normal hour, peak hour and stress loads. The one unsuccessful transaction for the normal hour was due to a RETAS processing error.

History: Transaction success rate is 100% for normal hour, peak hour and for stress loads for both POTS and Specials.

Extended History: POTS – Transaction success rate is 90% for Normal and for Stress loads and 100% for Peak hour. Specials - Transaction success rate is 100% for normal hour, peak hour and for stress loads. The two unsuccessful transactions for the normal hour and stress loads were due to a RETAS processing error.

3.2.3 Comparison to BA-MA M&R Metrics

As part of the analysis, the test manager compared RETAS response for September and December 2000 loads with BA-MA metrics calculated for the test days (February 17, 18, 22, and 23, 2000):

Table 2-18: M&R Metrics Reported by BA-MA for February 2000[100]

RETAS Mask	Metric	Bell Atlantic Retail	
		Reported	Std. (retail + <4 secs)
Create	MR-01-01	8.14	12.14
Status	MR-01-02	3.62	7.62
Modify	MR-01-03	8.14	12.14
Close	MR-01-04	8.89	12.89
History	MR-01-05	0.61	4.61
MLT	MR-01-06	67.25	71.25

Test data can be used to compare RETAS response time to metrics after accounting for differences in security and test environment conditions. During this test, a special override handle code[101] was used for certain *create* transactions that prevented dispatch of BA-MA technicians. Bell Atlantic quantified the effect of using the special handle code. There was no time effect of handle code use for the *create* transactions, therefore, time adjustments were not required for the RETAS Performance Evaluation Test.

3.2.4 Response Impact on Security

Because wholesale customers share a single application, RETAS has an extra layer of security when compared to BA-MA's retail M&R systems. The additional security processing time was extracted from the raw transaction data and is provided in the table below. The metrics standard allows four seconds for this difference.

Table 2-19: Wholesale and Retail Security Differences[102]

RETAS Mask	Incremental Security Time (Secs.)	Metric Allowance (Secs.)
MLT	3.38	4
Create	2.79	4
Status	3.47	4
Close	3.51	4
History	3.32	4

[100] The figures in this table are reported in the February 28, 2000 Compliance Filing, New York State Carrier-to-Carrier Guidelines Performance Standards and Reports.

[101] The Override Handle Code is an optional field in the Trouble Create mask of GUI version III. The test manager was instructed by BA-MA to use the handle code "NY OSS Test" in order to ensure that trouble reports during the RETAS Performance Test did not result in the dispatch of BA-MA technicians.

[102] RETAS documentation states that Compare time is equal to Total time for Modify transactions. Time adjustment for security during the Modify transaction is not required.

3.2.5 Comparison with BA-MA Retail Response Times

Comparing the M&R2 test response times with the BA-MA Retail M&R response times gives us a comparison of the two response times. The time taken for security authentication for the CLEC issued transactions is reduced so that the comparison is at parity. The following table illustrates the same.

Table 2-20: M&R2 Test Normalized Response Time

RETAS Mask	Metric	Retail	M&R2 Test		
			Response	Security Adjustment	Total
Create	MR-01-01	**8.14**	8.0	2.79	**5.21**
Status	MR-01-02	**3.62**	8.33	3.47	**4.86**
Modify	MR-01-03	**8.14**	4.67	0.00	**4.67**
Close	MR-01-04	**8.89**	11.33	3.51	**7.82**
History[103]	MR-01-05	**0.61**	10.0	3.32	**6.68**
MLT	MR-01-06	**67.25**	70.33	3.38	**66.95**

[103] Bell Atlantic has made updates in RETAS to change the access methodology for the history transaction. This change, made on May 30, 2000, has reduced response times for RETAS history transactions.

C. Test Results: Repair Trouble Administration System (RETAS) Capacity Management Evaluation (M&R3)

1.0 Description

The Repair Trouble Administration System (RETAS) Capacity Management Evaluation consisted of a detailed review of the safeguards and procedures in place to plan for and to manage projected growth in the use of RETAS for wholesale trouble management.

2.0 Methodology

This section summarizes the test methodology.

2.1 Business Process Description

The RETAS system, in conjunction with Bell Atlantic core factory trouble management systems, allow Competitive Local Exchange Carriers (CLECs) and resellers to carry out trouble repair administrative functions. These functions include: initiate/receive circuit tests, create/enter trouble tickets, modify trouble tickets, monitor the status of trouble tickets, and close trouble tickets.

2.2 Scenarios

Scenarios were not applicable to this test.

2.3 Test Targets & Measures

The test target was the Bell Atlantic-Massachusetts RETAS Capacity Management. Processes, sub-processes, evaluation measures, and associated test cross-reference numbers are summarized in the following table. The last column, "Test Cross-Reference," indicates where the particular measures are addressed in Section 3.1 "Results & Analysis."

Table 3-1: Test Target Cross-Reference

Process	Sub-Process	Evaluation Measure	Test Cross-Reference
RETAS Capacity Management	Data collection and reporting	Data collection and reporting of business volumes, resource utilization, and performance monitoring	MR-3-1-1, MR-3-1-2, MR-3-1-3, MR-3-1-4, MR-3-1-5, MR-3-1-6

Process	Sub-Process	Evaluation Measure	Test Cross-Reference
RETAS Capacity Management	Data verification and analysis	Data verification and analysis of business volumes, resource utilization, and performance monitoring	MR-3-1-7, MR-3-1-8, MR-3-1-9, MR-3-1-10
RETAS Capacity Management	Systems planning	Systems and capacity planning	MR-3-1-11, MR-3-1-12, MR-3-1-13, MR-3-1-14, MR-3-1-15

2.4 Data Sources

The data collected for the test are summarized in the table below.

Table 3-2: Data Sources for RETAS Capacity Management Evaluation

Document	File Name	Location in Work Papers	Source
DCN&DR Design Review Pre-Development Phase	ASSETQST.doc	MR-3-A-I-1	BA-MA
Program/1 Distributed Systems Peak CPU and Memory Utilization	cap_mgt_peak_data.doc	MR-3-A-I-2	BA-MA
IGS Wholesale Architecture	PO13-JB-summary-a1014.vsd	MR-3-A-I-3	BA-MA
Data center server diagram	PO13-JB-scalability-a1014.vsd	MR-3-A-I-4	BA-MA
Sentinel/EnView Overview	enviewinfo.ppt	MR-3-A-I-5	BA-MA
The Bell Atlantic Firewall Infrastructure	KPMG_presentation.ppt	MR-3-A-I-6	BA-MA

Document	File Name	Location in Work Papers	Source
Bell Atlantic DCNDR ISO9002 Certificate	Hard Copy	MR-3-A-I-7	BA-MA
ISO9001 non-conformity clearance report	Hard Copy	MR-3-A-I-8	BA-MA
Architecture for Firewall-1 Implementation	Hard Copy	MR-3-A-I-9	BA-MA
INS Baseline Firewall Architecture, Project Description	Hard Copy	MR-3-A-I-10	BA-MA
Bell Atlantic Firewall Forms	Hard Copy	MR-3-A-I-11	BA-MA
Firewall Baseline Implementation Standards	Hard Copy	MR-3-A-I-12	BA-MA
Firewall – Trouble Reporting Process	Hard Copy	MR-3-A-I-13	BA-MA
Information and Network Security Policy Exception Process	Hard Copy	MR-3-A-I-14	BA-MA
Firewall – Trouble Reporting Procedures Contact List	Hard Copy	MR-3-A-I-15	BA-MA
1999 Score Card Considerations	Hard Copy	MR-3-A-I-16	BA-MA
Enterprise Communications Workflow Process	Hard Copy	MR-3-A-I-17	BA-MA

Document	File Name	Location in Work Papers	Source
Network Capacity Planning	Hard Copy	MR-3-A-I-18	BA-MA
DCNDR Role Description	Hard Copy	MR-3-A-I-19	BA-MA
Bell Atlantic-North Utilization Report	Hard Copy	MR-3-A-I-20	BA-MA
Capacity Planning Collection and Reporting Procedures	Hard Copy	MR-3-A-I-21	BA-MA
MVS Software Installation Acceptance Guide	Hard Copy	MR-3-A-I-22	BA-MA
MVS Software Installation Implementation Guide	Hard Copy	MR-3-A-I-23	BA-MA
MVS Software Installation Implementation Guide	Hard Copy	MR-3-A-I-24	BA-MA
IGS Wholesale Architecture	Hard Copy	MR-3-A-I-25	BA-MA
EnView Network Diagrams	Hard Copy	MR-3-A-I-26	BA-MA
Bell Atlantic Data Center, Network & Distributed Resources, Program 1 Support	Hard Copy	MR-3-A-I-27	BA-MA

Document	File Name	Location in Work Papers	Source
Mainframe computing forecasts	Hard Copy	MR-3-A-I-28	BA-MA
Network & Corporate Systems DCN & DR Program 1 Support, KPMG Consulting Presentation (March 6)	Hard Copy	MR-3-A-I-29	BA-MA
Quarterly Report, Bell Atlantic-North Business CPU Utilization Reports	Hard Copy	MR-3-A-I-30	BA-MA
Quarterly Report, Bell Atlantic-North Production CPU Utilization Reports	Hard Copy	MR-3-A-I-31	BA-MA
Quarterly Report, Bell Atlantic-North Production DASD Utilization	Hard Copy	MR-3-A-I-32	BA-MA
Service Improvement Planning	Hard Copy	MR-3-A-I-33	BA-MA
Mainframe Provisioning	Hard Copy	MR-3-A-I-34	BA-MA
DTIG & Network Planner Job Description	Hard Copy	MR-3-A-I-35	BA-MA
Production Support Manager Job Description	Hard Copy	MR-3-A-I-36	BA-MA
ISO9002 Table of Contents	Hard Copy	MR-3-A-I-37	BA-MA

Document	File Name	Location in Work Papers	Source
Change Management Implementation Standard	Hard Copy	MR-3-A-I-38	BA-MA
Quarterly Report, Bell Atlantic-North Production DASD Utilization	Hard Copy	MR-3-A-I-39	BA-MA
Bell Atlantic-North and South CPU Capacity Used vs. Capacity Available	Hard Copy	MR-3-A-I-40	BA-MA
Application Planning	Hard Copy	MR-3-A-I-41	BA-MA
Mainframe Scorecard Operating Procedures	Hard Copy	MR-3-A-I-42	BA-MA
Mainframe Exception Report Operating Procedure	Hard Copy	MR-3-A-I-43	BA-MA
Out-of-Cycle Modeled Demand Mainframe/Midrange Capital Requirements	Hard Copy	MR-3-A-I-44	BA-MA
Application Planning Processing Anomalies Investigation Guide	Hard Copy	MR-3-A-I-45	BA-MA
Design Review Policy	Hard Copy	MR-3-A-I-46	BA-MA
Service Improvement Planning Policy	Hard Copy	MR-3-A-I-47	BA-MA

Document	File Name	Location in Work Papers	Source
DCN & DR Design Review Pre-Development Phase Template	Hard Copy	MR-3-A-I-48	BA-MA
Program/1 Capacity Management	Hard Copy	MR-3-A-I-49	BA-MA
Capacity Management Handbook, Methods & Procedures for Program/1, Distributed Capacity Metrics and Management	Hard Copy	MR-3-A-I-50	BA-MA
Weekly Table, System Utilization Metrics Summary Report for EDI Order Servers	Hard Copy	MR-3-B-I-1	BA-MA
HP Openview Description	Hard Copy	MR-3-B-I-2	BA-MA
M&R3 Detailed Test Plan	Hard Copy	MR-3-C-II-1	KPMG Consulting
Data Center Network & Distributed Resources Meeting Summary (March 6, 2000)	BA-NY Meeting-Summary-3-6-2000.doc	MR-3-C-II-2	KPMG Consulting
Bell Atlantic Interview Summary Response for (March 6, 2000)	Bell Atlantic Interview Summary3700.doc	MR-3-C-II-3	BA-MA
Meeting with Blue Hill Computer Center Operations Meeting Summary (April 13, 2000)	BA-PearlRiver-BHCC-Meeting-Summary-4-13-2000.doc	MR-3-C-II-4	KPMG Consulting

Document	File Name	Location in Work Papers	Source
Bell Atlantic PonTronic Software Demo Meeting Notes (March 28, 2000)	Bell Atlantic PonTronic Software Demo.doc	MR-3-C-II-5	KPMG Consulting
Blue Hill Computing Center Interview Summary (April 13, 2000)	BHCC_Intv_041300.doc	MR-3-C-II-6	KPMG Consulting
Program/1 Capacity Management Meeting Summary (April 27, 2000)	BA-CapMgmt-Meeting-Summary-4-27-2000.doc	MR-3-C-II-7	KPMG Consulting
Bell Atlantic Interview Summary Response for (April 27, 2000)	Interview Summary Response apr27.doc	MR-3-C-II-8	BA-MA
Amdahl-Bell Atlantic EnView Case	mm002674.pdf	MR-3-C-II-9	KPMG Consulting
Service-level Management, An Introduction for Executives	enviewus.pdf	MR-3-C-II-10	KPMG Consulting
EnView, Service-Level Management Solution	mm002673.pdf	MR-3-C-II-11	KPMG Consulting
Managing Continuous Availability, Exploring the Options for Efficient, Effective Management Tools	mm002797.pdf	MR-3-C-II-12	KPMG Consulting
EnView Monitor	mm002809.pdf	MR-3-C-II-13	KPMG Consulting
EnView Robot	mm002812.pdf	MR-3-C-II-14	KPMG Consulting

Document	File Name	Location in Work Papers	Source
EnView 3.1 Summary of Enhancements	mm002931.pdf	MR-3-C-II-15	KPMG Consulting
EnView Reporter	mm002932.pdf	MR-3-C-II-16	KPMG Consulting
KPMG Consulting Exit Peer Review Signoff (July 2000)	Hard Copy	MR-3-C-II-17	KPMG Consulting

2.4.1 Data Generation/Volumes

This test did not rely on data generation or volume testing.

2.5 Evaluation Methods

The evaluation methods used for this test consisted of interviews with Bell Atlantic personnel, reviews of publicly available information, and reviews of documentation provided by Bell Atlantic.

2.6 Analysis Methods

The RETAS Capacity Management Evaluation included a checklist of evaluation criteria developed by the test manager during the initial phase of the Bell Atlantic-Massachusetts OSS Evaluation. These evaluation criteria, detailed in the *Master Test Plan*, provided the framework of norms, standards, and guidelines for the RETAS Capacity Management Evaluation.

The data collected were analyzed employing the evaluation criteria referenced above.

3.0 Results Summary

This section identifies the evaluation criteria and test results.

3.1 Results & Analysis

The results of this test are presented in the table below.

Table 3-3: M&R3 Evaluation Criteria and Results

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-3-1-1	Processes exist for capturing business and transaction volumes.	Satisfied	BA-MA employs computerized and automated systems to capture business and transaction volumes. Each of the different production servers collect data on a daily basis, and this data is stored in a central repository for analysis and reporting purposes.
MR-3-1-2	Processes exist for measuring and tracking resource utilization.	Satisfied	Resource utilization for the RETAS system is captured through the use of automated tools such as the "Configuration Toolkit," which is a group of utilities that collects this data, as described in internal BA-MA documentation. As data are accumulated and processed, reports are posted on the Bell Atlantic Enterprise Network Services intranet website for access. In addition, the mainframe computers that support core factory trouble management systems schedule daily runs of the MVS Information Control Systems (MICS) application that captures resource utilization and archives it on a database for analysis purposes.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-3-1-3	The performance of those elements necessary for the processing of electronic transactions are measured and tracked.	Satisfied	RETAS and core factory trouble management system resource utilization is monitored at appropriate system components and elements. A variety of utilities, applications, and tools are used to provide electronic monitoring. RETAS production data is regularly measured and tracked to monitor business volumes and transaction timeliness. At the core factory system application level, Sentinel/EnView is an application that provides a real-time view from a remote location on the performance of a particular application from a user's perspective. Thus, the performance a user is experiencing can be observed remotely as if the network operations personnel were sitting at the user's terminal or system. At the computing level, utilization for components such as the central processing unit (CPU) and disk array storage devices (DASD) that serve RETAS systems are monitored through reports such as Resource Monitoring Facility (RMF) for the mainframe computers. Utilities such as Memtool, GlancePlus, VMSTAT, or SVMon are employed for UNIX computing platforms. For network level monitoring BA-MA uses Toolkit which is an internally developed system that regularly and frequently collects an array of traffic variables from all the routers in the data network.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-3-1-4	Tools exist to monitor and collect resource utilization data.	Satisfied	A suite of tools and utilities are used by BA-MA to collect resource utilization data. Sentinel/EnView is an application used to collect resource utilization data for core factory trouble management systems. For mainframe computers, the Resource Monitoring Facility (RMF) is used to collect utilization data on devices such as the central processing units (CPUs) and disk array storage devices (DASDs). Similarly, for UNIX platform computers resource utilization data for CPU and memory utilization is collected through tools such as System Activity Reporter (SAR), Memtool, and SVMon.
MR-3-1-5	Performance is monitored at all applicable levels (e.g., network, database server, application server, client, etc.).	Satisfied	Sentinel/EnView allows core factory trouble management system performance to be monitored at numerous levels. Residing on core factory trouble management systems are "robots". These robots, which are also located on remote users' systems, send test transactions through the system(s) to mimic real world processing then monitor the performance of the test transaction(s). Based on the results returned by the test transactions, it is possible to zero in on specific levels, such as application or network. The robots allow the network operations within BA-MA to have a real-time view of application performance from a user's perspective. For the different computing systems, BA-MA employs a range of utilities and tools to monitor performance on a daily basis. For instance, mainframe computing platforms use Resource Monitoring Facility (RMF) to watch different levels such as the central processing unit (CPU), disk array storage device (DASD), user activity, and tape storage. UNIX computing platforms use tools such as GlancePlus to provide views on system performance.

Test Cross-Reference	Evaluation Criteria	Result	Comments
			Network performance monitoring is done through tools and utilities such as HP Openview and Critical IP Report.
MR-3-1-6	Instrumentation and other tools exist to monitor performance.	Satisfied	BA-MA has instrumentation that, on a frequent and scheduled basis, gathers performance data from different areas of the core factory trouble management systems, produces reports, and if necessary, generates alarms to signify possible performance problems. For instance, Sentinel/EnView gathers data on core factory trouble management application performance and compares it to established thresholds. The status of the application performance is then presented for viewing.
MR-3-1-7	A process exists for forecasting business volumes and transactions.	Satisfied	BA-MA teams participate in regular meetings regarding the forecast of business volumes and transactions. Network Planners from the Enterprise Network Planning team participate in determining future network resources to ensure adequate network and system performance. Trending techniques are applied to current and historical data to assist in the forecasting process. Any anomalies and future business decisions are assessed to determine if and when they will affect Bell Atlantic's infrastructure. In addition, Application Planners will use forecasting techniques to estimate future volumes. These forecasts are used as inputs in determining budget allocations to support the forecasted demand. An internal Bell Atlantic Enterprise Networks web page has an archive of performance reports that can be accessed by personnel for examination using defined processes and techniques. Bell Atlantic also has marketing teams that work with CLECs to determine aggregate growth projections. These processes and procedures are documented in internal BA-MA documentation.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-3-1-8	Processes exist to provide the business volume tracking and forecasting data for use in capacity management planning.	Satisfied	Organizations within Bell Atlantic develop forecasts from a detailed perspective including the central processing unit (CPU) level, all the way to gathering input from CLECs and other Bell Atlantic organizations whose strategic direction can impact capacity management.
MR-3-1-9	Processes exist for reviewing the performance of the business and transaction volume forecasting process.	Satisfied	BA-MA produces internal "scorecards" on a monthly basis to assess the amount of computing resources used by RETAS and the core factory trouble management systems. The scorecard data are based on the information gathered daily by the various performance gathering tools. Comparisons are made between actual utilization versus forecasted or budgeted goals. Analysis is performed on anomalies and if necessary, solutions (e.g., additional equipment purchases) are developed to deal with any unplanned changes to volumes. The Sentinel/EnView tool collects real time data on core factory trouble management application performance and the data is compared against expected levels or norms. If these thresholds are exceeded then the appropriate notification is made.
MR-3-1-10	Processes exist for verification and validation of data associated with processing of transactions.	Satisfied	On a daily basis, BA-MA teams responsible for systems, such as RETAS, verify performance. Following the review of the data, the teams proceed to attend two sets of mandatory meetings, including one at the executive level, to present performance data and discuss any problems or issues that have occurred from the previous day.
MR-3-1-11	A capacity management process is defined and documented.	Satisfied	BA-MA has a defined and documented processes for RETAS systems capacity management. These processes are explained in internal BA-MA documentation.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-3-1-12	The capacity management process provides for the incorporation of resource usage and capacity in its planning process.	Satisfied	The Bell Atlantic personnel that are involved with the trouble management systems capacity management planning process use current and historical resource usage data as one of several inputs. Utilization data exists for integral components impacting trouble management systems such as central processing unit (CPU), memory, disk space, and network elements. These data are analyzed and considered during the planning process.
MR-3-1-13	The capacity management process provides for the incorporation of performance monitoring results.	Satisfied	During the trouble management systems capacity management planning process, BA-MA uses archived historical performance data as one if its inputs. Performance data is an important aspect of the capacity management planning process, and it is a necessary component of the requisite documentation that needs to be completed as part of BA-MA's internal analysis process.
MR-3-1-14	Systems are designed in a manner that would allow them to scale to meet increases in demand.	Satisfied	Trouble management systems employ scalable computing systems so increases in demand can be accommodated. For instance, some of the mainframe computing platforms are ordered with additional pre-installed dormant processors that can be activated on short notice with the simple purchase of a password from the computer vendor. Similarly, UNIX platform servers can accommodate additional central processors as need arises.
MR-3-1-15	Processes exist which provide guidelines for increasing capacity, load re-balancing, or systems tuning based on fluctuations in demand.	Satisfied	BA-MA has expected norms of resource utilization and performance. The various monitoring tools and utilities that are deployed throughout the network, computing platforms, and applications provide notification or trigger alarms to the necessary Bell Atlantic organizations so that appropriate capacity management related contingency processes and plans can be exercised. Possible actions may include short-term actions such as allocating additional processing time through to ordering additional equipment.

D. Test Results: M&R Process Evaluation (M&R4)

1.0 Description

The objective of this test was to evaluate the equivalence of the Bell Atlantic end-to-end processes for retail and wholesale trouble reporting and repair. This evaluation is comprised of two evaluation activities.

Part 1 (Procedural Review) is a review of Bell Atlantic's maintenance and repair processes to assess any differences between Bell Atlantic processes for retail and wholesale maintenance and repair.

Part 2 (End-to-End) is the evaluation of Bell Atlantic's maintenance and repair performance on real provisioned wholesale accounts.

2.0 Methodology

This section summarizes the test methodology.

2.1 Business Process Description

Maintenance and Repair Process – Wholesale

Wholesale customers contact the Regional CLEC Maintenance Center (RCMC) with maintenance and repair concerns. The RCMC serves as the single point of contact for verbally reporting troubles to Bell Atlantic for the wholesale customer. Alternately, CLECs may initiate trouble reports through the Repair Trouble Administration System (RETAS).

Troubles reported through the RCMC are verified by Repair Service Clerks (RSCs) in the RCMC. RSCs (i) identify the type of trouble and affected network element; (ii) check the trouble ticket to ensure that it has been correctly entered; and (iii) initiate tests and subsequently manage the repair process to closure.

Trouble tickets are created in different systems depending on whether they are vertical feature or special service issues. Vertical feature trouble tickets are entered into the Loop Maintenance Operations System (LMOS) and special service trouble tickets are dealt with in the Work Force Administration System (WFA).

Troubles entered in the LMOS and WFA system by RSCs are designated by "Handle Code." These handle codes determine where the trouble is to be routed. When a trouble is determined to be a Dispatch In (DI), it is sent to the Network Operations Center organization for trouble isolation/close-out based on the associated handle code. DI Handle codes route trouble tickets to the following Network Operations Center organizations:

- Frame – A frame designation in the handle code will send the ticket to the frame organization. Troubles include basic troubles such as jumper problems.
- Switching – A switching designation signifies more complex switch troubles such as Direct-in-Dialing and Centrex issues.
- RCMAC – A handle code designating the RCMAC signifies a line translation issue.

When a trouble is determined to be a Dispatch Out (DO), trouble tickets are sent to the Wholesale Installation and Maintenance organization for geographic dispatch of technicians.

All troubles are prioritized based on customer impact and repair commitment date/time.

Maintenance and Repair Process – Retail

Retail customers report troubles to their regional Customer Repair Service Center. The RSC (Repair Service Clerk) creates a trouble ticket in the Loop Maintenance Operations System (LMOS) and Work Force Administration systems directly or through the Caseworker tool. Troubles reported to the CRSC are verified by Repair Service Clerks (RSCs). RSCs (i) identify the type of trouble and affected network element; (ii) check the trouble ticket to ensure that it has been correctly entered; and (iii) initiate tests and subsequently manage the repair process to closure.

Trouble tickets are created in different systems depending on whether they are vertical feature or special service issues. Vertical feature trouble tickets are entered into the LMOS and special service trouble tickets are dealt with in WFA system.

Troubles entered in the LMOS and WFA system by RSCs are designated by "Handle Code." These handle codes determine where the trouble is to be routed. When a trouble is determined to be a Dispatch In (DI), it is sent to the Network Operations Center organization for trouble isolation/close-out based on the associated handle code. DI Handle Codes route trouble tickets to the following Network Operations Center organizations:

- Frame – A frame designation in the handle code will send the ticket to the frame organization. Troubles include basic troubles such as jumper problems.
- Switching – A switching designation signifies more complex switch troubles such as Direct-in-Dialing and Centrex issues.
- RCMAC – A handle code designating the RCMAC signifies a line translation issue.

When a trouble is determined to be a Dispatch Out (DO), trouble tickets are sent to the Consumer Service Center organization for geographic dispatch of technicians.

All troubles are prioritized based on customer impact and repair commitment date/time.

2.2 Scenarios

Selected scenarios from the *Master Test Plan* were utilized during the evaluation.

2.3 Test Targets & Measures

The test target is the maintenance and repair end-to-end process. Processes, sub-processes, evaluation measures, and associated test cross-reference numbers are summarized in the following table. The last column, "Test Cross-Reference," indicates where the particular measures are addressed in Section 3.1 "Results & Analysis."

The test targets and measures utilized are summarized below.

Table 4-1: Test Target Cross-Reference

Process	Sub-Process	Evaluation Measure	Test Cross-Reference
End-to-End M&R Process: Resale	Process Flow Documentation	Comparison with Retail	MR-4-1-1, MR-4-1-3, MR-4-1-4
End-to-End M&R Process: Resale	Process Evaluation	Completeness, consistency, and timeliness of the process	MR-4-1-2, MR-4-1-4, MR-4-1-5
End-to-End M&R Process: UNE/UNE-P	Process Flow Documentation	Comparison with Retail	MR-4-1-1, MR-4-1-3, MR-4-1-4
End-to-End M&R Process: UNE/UNE-P	Process Evaluation	Completeness, consistency, and timeliness of the process	MR-4-1-2, MR-4-1-4, MR-4-1-5
End-to-End M&R Process	Feature Trouble: StarMem	Timeliness, Trouble Type Code, Trouble Disposition, Cause Code	MR-4-2-1, MR-4-2-2, MR-4-2-3, MR-4-2-4
End-to-End M&R Process	Feature Trouble: Non-StarMem	Timeliness, Trouble Type Code, Trouble Disposition, Cause Code	MR-4-2-5, MR-4-2-6, MR-4-2-7, MR-4-2-8

Process	Sub-Process	Evaluation Measure	Test Cross-Reference
End-to-End M&R Process	Dispatch In	Timeliness, Trouble Type Code, Trouble Disposition, Cause Code	MR-4-2-9, MR-4-2-10, MR-4-2-11, MR-4-2-12
End-to-End M&R Process	Dispatch Out	Timeliness, Trouble Type Code, Trouble Disposition, Cause Code	MR-4-2-13, MR-4-2-14, MR-4-2-15, MR-4-2-16

2.4 Data Sources

The data collected for the test are summarized in the table below.

Table 4-2: Data Sources for M&R Process Evaluation

Document	File Name	Location in Work Papers	Source
Center Descriptions & Contacts	Hard Copy	MR-6-A-1	Bell Atlantic
Regional RCMC Organization Chart	Hard Copy	MR-6-A-2	Bell Atlantic
Trouble Monitoring and Escalation Process	Hard Copy	MR-6-A-3	Bell Atlantic
Expanded Extended Loop Job Aid for Maintenance-North	Hard Copy	MR-6-A-4	Bell Atlantic
WFA-C Maintenance Appointments	Hard Copy	MR-6-A-5	Bell Atlantic
Service Manager Assignments	Hard Copy	MR-6-A-6	Bell Atlantic
Trouble Close Out Process	Hard Copy	MR-6-A-7	Bell Atlantic
RCMC Coordinator's Guide DS3 Unbundled Loop Service	Hard Copy	MR-6-A-8	Bell Atlantic

Document	File Name	Location in Work Papers	Source
WFA-C Trouble Report Procedure for Specials (OSSTRE Screen Entry)	Hard Copy	MR-6-A-9	Bell Atlantic
LNP Trouble Isolation	Hard Copy	MR-6-A-10	Bell Atlantic
TXNU and TXSU Trouble Ticket Entry and Handoff in WFA-C RCMC and RCCC (North)	Hard Copy	MR-6-A-11	Bell Atlantic
Procedures for Use of WFA/C – Midatlantic	Hard Copy	MR-6-A-12	Bell Atlantic
EEL – Transport (Backbone) and M Loops–South Maintenance	Hard Copy	MR-6-A-13	Bell Atlantic
RCMC Operations Plan 4Q99 through 2000	Hard Copy	MR-6-A-14	Bell Atlantic
RCMC Force Model 1999-2000	Hard Copy	MR-6-A-15	Bell Atlantic
Regional CLEC Operations Contact List & Escalation Flow	Hard Copy	MR-6-A-16	Bell Atlantic
Vendor Meet Process for UNE Loops – Maintenance North and South	Hard Copy	MR-6-A-17	Bell Atlantic
Secondary Dispatch Process	Hard Copy	MR-6-A-18	Bell Atlantic
ACD Workgroup (screen print)	Hard Copy	MR-6-A-19	Bell Atlantic
Pinacle ACD Report (two hour view)	Hard Copy	MR-6-A-20	Bell Atlantic
RCMC Major System Failure Procedures	Hard Copy	MR-6-A-21	Bell Atlantic

Document	File Name	Location in Work Papers	Source
RCMC Quality Assurance Plan	Hard Copy	MR-6-A-22	Bell Atlantic
Monthly Report Card (employee example)	Hard Copy	MR-6-A-23	Bell Atlantic
RCMC Weekly Performance Report	Hard Copy	MR-6-A-24	Bell Atlantic
Jeopardy Management Escalation Process for Trouble Tickets	Hard Copy	MR-6-A-25	Bell Atlantic
Ratio of Workers per Tour (one week example)	Hard Copy	MR-6-A-26	Bell Atlantic
CLEC Check Worksheet	Hard Copy	MR-6-A-27	Bell Atlantic
WFA-C Check Sheet for the North	Hard Copy	MR-6-A-28	Bell Atlantic
RCMC Escalation Report	Hard Copy	MR-6-A-29	Bell Atlantic
RCMC Weekly Performance Report "Cumulative"	Hard Copy	MR-6-A-30	Bell Atlantic
RCMC Weekly Performance Report	Hard Copy	MR-6-A-31	Bell Atlantic
CLEC Handbook	Hard Copy	MR-5-B-1	Bell Atlantic
Resale Handbook	Hard Copy (printed from Bell Atlantic Wholesale Markets website)	MR-5-C-1	Bell Atlantic
RETAS Resellers Student Training Guide	Hard Copy	MR-5-D-1	Bell Atlantic
RETAS CLEC Student Training Guide	Hard Copy	MR-5-E-1	Bell Atlantic
CLEC Trouble Handling Job Aid	Hard Copy	MR-4-A-1	Bell Atlantic

Document	File Name	Location in Work Papers	Source
Resale Trouble Handling Job Aid	Hard Copy	MR-4-A-2	Bell Atlantic
Bell Atlantic Regional CLEC Maintenance Center Interview Report	Hard Copy	MR-4-A-3	KPMG Consulting
Bell Atlantic Network Operations Center Interview Report	Hard Copy	MR-4-A-4	KPMG Consulting
Bell Atlantic Consumer Service Center Interview Report	Hard Copy	MR-4-A-5	KPMG Consulting
Bell Atlantic Customer Repair Service Center Interview Report	Hard Copy	MR-4-A-6	KPMG Consulting
Bell Atlantic Wholesale Installation and Maintenance Interview Report	Hard Copy	MR-4-A-7	KPMG Consulting
Bell Atlantic Recent Change Memory Administration Center Interview Report	Hard Copy	MR-4-A-8	KPMG Consulting
Bell Atlantic New England Retail and Wholesale Maintenance and Repair Process Flows	Hard Copy	MR-4-A-9	KPMG Consulting
Bell Atlantic Technician's Guide Book (Disposition Codes)	Hard Copy	MR-4-A-10	Bell Atlantic

Document	File Name	Location in Work Papers	Source
RETAS Trouble Response and History for KPMG Consulting inserted troubles	Hard Copy	MR-4-B (Entire Binder)	KPMG Consulting
End-to-End Test Bed Customer Service Records	Hard Copy	MR-4-C (Entire Binder)	KPMG Consulting

2.4.1 Data Generation/Volumes

There was no data generation performed for the procedural review (Part 1) portion of this evaluation. Data generation to support the End-to-End evaluation (Part 2) consists of records gathered through RETAS during trouble ticket creation and trouble ticket history. Trouble ticket history transactions were performed to gather trouble ticket closeout information as it is placed into WFA and LMOS by Bell Atlantic.

2.5 Evaluation Methods

Part 1 (Process Evaluation)

The procedural review is an evaluation of Bell Atlantic's maintenance and repair process flow to assess whether there are substantive differences between retail and wholesale maintenance and repair processes. Process flow documentation for Bell Atlantic retail and wholesale maintenance and repair operations was reviewed with Bell Atlantic personnel. Bell Atlantic personnel in retail and wholesale maintenance and repair work centers were interviewed and monitored while handling troubles. The test manager performed observations of the work centers in order to identify substantive differences between the processes practiced in these work centers and those defined in Bell Atlantic customer, and methods and procedure documentation. Maintenance and repair process flows evaluated include the following:

- Reactive Maintenance Single Line Plain Ordinary Telephone Service (POTS) Retail Process Flow
- Reactive Maintenance Single Line POTS Wholesale Process Flow
- Unbundled Network Element Reactive Maintenance

Part 2 (End-to-End Evaluation)

For the end-to-end evaluation, Bell Atlantic provisioned a "test bed" of accounts specified by the test manager. The test bed contained circuit types and features representative of those provisioned by Bell Atlantic for its wholesale customers.

Software and hard faults were inserted into selected test bed accounts. The test manager then reported the troubles caused by these faults to Bell Atlantic using the RETAS tool. Then, the test manager tracked Bell Atlantic responses to reported troubles, gathering data for analysis. Specifically, the test manager collected data relating to timeliness, accuracy in diagnosis, and accuracy in resolving troubles.

There were two fault insertion/verification teams utilized in order to achieve geographic coverage. The fault insertion/verification teams were supported by test manager personnel who entered troubles using RETAS. One team inserted faults in test bed accounts served by the Winchester and Bowdoin central offices (COs), and the other team inserted faults in circuits provisioned from the Needham, Wellesley, and Westfield COs. Each fault insertion/verification team consisted of two test manager team members and one Bell Atlantic representative. The test manager team member verified fault insertion before trouble ticket creation, and validated repair after Bell Atlantic "closed-out" trouble tickets.

The following table provides the types and numbers of faults inserted into the test bed. The test manager inserted faults in circuits at all five COs available to the test manager for testing.

Table 4-3: Faults Inserted

Area	Type	Detail	Count
Feature Trouble	StarMem	Touch Tone, Call Waiting, etc.	18
Feature Trouble	Non-StarMem	Call Transfer, Sequential Hunting, etc.	6
Hard Trouble	Dispatch In	Open and Short	18
Hard Trouble	Dispatch Out	Open and Short	12

2.6 Analysis Methods

The M&R Process Evaluation included a checklist of evaluation criteria developed by the test manager during the initial phase of the Bell Atlantic-Massachusetts OSS Evaluation. These evaluation criteria, detailed in the *Master Test Plan*, provided the framework of norms, standards, and guidelines for the M&R Process Evaluation.

The data collected were analyzed employing the evaluation criteria referenced above.

3.0 Results Summary

This section identifies the evaluation criteria and test results.

3.1 Results & Analysis

The results of this test are presented in the tables below.

Table 4-4: (Part 1) M&R4 Procedural Review Evaluation Criteria and Results

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-4-1-1	M&R policies and procedures are clearly defined and documented for all customers.	Satisfied	Maintenance and Repair policies and procedures, as published in the CLEC and Resale Handbooks, Volume III, are publicly available to wholesale customers through the Bell Atlantic Wholesale Markets website at the following URL: www.bellatlantic.com/wholesale/html/customer_doc.htm Process flows are presented with descriptions for each workstep outlined. Among the areas covered in the Handbook series are the following: ♦ Trouble Administration Process Flow ♦ Submitting Trouble Reports in Bell Atlantic Electronically ♦ Handling Trouble Reports Before the LMOS Line Records are Updated ♦ [Wholesale customer's] Role in Trouble Administration ♦ Bell Atlantic's Role in Trouble Administration ♦ Unbundled Network Elements in Bell Atlantic ♦ Regional CLEC Maintenance Center Support ♦ Internal/External Escalations ♦ Disposition and Cause Codes

Test Cross-Reference	Evaluation Criteria	Result	Comments
			Additionally, policies and procedures for trouble administration are made available in the Telecom Industry Services RETAS Student User Guides. These guides are provided to wholesale customers that elect to attend the RETAS training provided by Bell Atlantic.
MR-4-1-2	A complete description of the M&R processes is documented and communicated.	Satisfied	A complete description of the maintenance and repair process is published in the CLEC and Resale Handbooks, Volume III. These are made publicly available to wholesale customers through the Bell Atlantic Wholesale Markets website at the following URL: www.bellatlantic.com/wholesale/html/customer_doc.htm Process flows are presented with descriptions for each workstep outlined.
MR-4-1-3	M&R processes and procedures for trouble diagnosis and appointment scheduling are complete and consistent for wholesale and retail customers.	Satisfied	Trouble diagnosis utilizes the same systems for both retail and wholesale. Electronic diagnosis in Bell Atlantic's North East region is provided through the Delphi system and allows Mechanized Loop Testing (MLT) and Switched Access Remote Test System (SARTS) for both retail and wholesale customers. Wholesale customers access these systems through the RETAS system or call the RCMC to have these systems accessed by Bell Atlantic. Both the RCMC and the corresponding retail organization(s) access these test systems utilizing the Caseworker tool. Processes and procedures for the use of these test systems are presented to wholesale customers in the Handbook series as well as the RETAS Student User Guides.

Test Cross-Reference	Evaluation Criteria	Result	Comments
			Scheduling of appointment times, for both wholesale and retail customers, is routinely assigned from the Loop Maintenance Operations System (LMOS) and the Work Force Administration System (WFA) on a first-in/first-out basis. The next available appointment time can be selected for escalated troubles for both retail and wholesale customers. The trouble escalation process is described in the [Wholesale Customer] Handbook series.
MR-4-1-4	The process ensures parity between Bell Atlantic retail and wholesale customers.	Satisfied	Measures have been put in place to achieve parity with Bell Atlantic retail trouble administration. These include the following: Bell Atlantic stipulates a special process for creating trouble tickets before the LMOS line records are updated. This process is defined in the CLEC and Resale Handbook, Volume III. The test manager utilized this process to create 22 trouble tickets. Bell Atlantic stipulates a process to deal with the differences between retail and wholesale operations for instances where there is an incorrect dispatch. The test manager created 10 UNE Loop trouble tickets, all of which were incorrectly dispatched. Bell Atlantic followed its documented process in dealing with this situation.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-4-1-5	The process includes complete and consistent procedures for closure posting.	Satisfied	Closure posting procedures internal to Bell Atlantic are dependent on the particular type of service/account effected. These procedures are explained in the following Bell Atlantic Job Aids: ♦ Expanded Extended Loop Job Aid for Maintenance ♦ Trouble Close Out Process ♦ TXNU and TXSU Trouble Ticket Entry and Handoff in WFA-C RCMC and RCCC ♦ EEL – Transport (Backbone) and M Loops ♦ Vendor Meet Process for UNE Loops Closure posting as it effects the wholesale customer is described in the [Wholesale Customer] Handbook Series. This process is for the Maintenance Control Organization or technician working the trouble to attempt to reach the customer and advise of close out. Bell Atlantic will then update its systems appropriately. Trouble close out information can be obtained as above or by calling the RCMC or by utilizing the RETAS system. This closure posting process, with the exception of calling the RCMC or utilizing RETAS, is the same as for the retail organization. Additionally, this process was observed during the "End-to-End Process" (Part 2) of this evaluation.

Table 4-5: (Part 2) M&R4 End-to-End Evaluation Criteria and Results

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-4-2-1	Timeliness in the repair of StarMem Feature Faults	Satisfied	18 of 18 trouble tickets were successfully resolved before the commitment time and date.
MR-4-2-2	Accuracy of Trouble Type Code for StarMem Feature Faults	Satisfied	18 of 18 trouble type codes reported by Bell Atlantic accurately described the underlying fault.
MR-4-2-3	Accuracy of Disposition Code for StarMem Feature Faults	Satisfied	18 of 18 disposition codes reported by Bell Atlantic accurately described the corrective action taken.
MR-4-2-4	Accuracy of Cause Code for StarMem Feature Faults	Satisfied	18 of 18 cause codes reported by Bell Atlantic accurately describe the cause of the fault.
MR-4-2-5	Timeliness in the repair of Non-StarMem Feature Faults	Satisfied	6 of 6 trouble tickets were successfully resolved before the commitment time and date.
MR-4-2-6	Accuracy of Trouble Type Code for Non-StarMem Feature Faults	Satisfied	6 of 6 trouble type codes reported by Bell Atlantic accurately described the underlying fault.
MR-4-2-7	Accuracy of Disposition Code for Non-StarMem Feature Faults	Satisfied	6 of 6 disposition codes reported by Bell Atlantic accurately described the corrective action taken.
MR-4-2-8	Accuracy of Cause Code for Non-StarMem Feature Faults	Satisfied	6 of 6 cause codes reported by Bell Atlantic accurately describe the cause of the fault.
MR-4-2-9	Timeliness in the repair of DI Faults	Satisfied	18 of 18 trouble tickets were successfully resolved before the commitment time and date.
MR-4-2-10	Accuracy of Trouble Type Code for DI Faults	Satisfied	18 of 18 trouble type codes reported by Bell Atlantic accurately described the underlying fault.
MR-4-2-11	Accuracy of Disposition Code for DI Faults	Satisfied	18 of 18 disposition codes reported by Bell Atlantic accurately described the corrective action taken.
MR-4-2-12	Accuracy of Cause Code for DI Faults	Satisfied	18 of 18 cause codes reported by Bell Atlantic accurately describe the cause of the fault.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-4-2-13	Timeliness in the repair of DO Faults	Satisfied	12 of 12 trouble tickets were successfully resolved before the commitment time and date.
MR-4-2-14	Accuracy of Trouble Type Code for DO Faults	Satisfied	12 of 12 trouble type codes reported by Bell Atlantic accurately described the underlying fault.
MR-4-2-15	Accuracy of Disposition Code for DO Faults	Satisfied	12 of 12 disposition codes reported by Bell Atlantic accurately described the corrective action taken.
MR-4-2-16	Accuracy of Cause Code for DO Faults	Satisfied	12 of 12 cause codes reported by Bell Atlantic accurately describe the cause of the fault.

E. Test Results: M&R Documentation Review (M&R5)

1.0 Description

The M&R5 Documentation Review is an analysis of the documentation used by CLECs and Resellers to interact with Bell Atlantic in conducting Maintenance and Repair activities. This evaluation is a high-level review intended to evaluate the quality and completeness of the Maintenance and Repair documentation prepared and distributed by Bell Atlantic. This evaluation is not designed to determine whether system functionality matches the functionality described in the documentation. That analysis is addressed in conjunction with M&R1: RETAS (Repair Trouble Administration System) Functionality Evaluation and the Change Management Practices Verification and Validation Review (RMI1) to track documentation changes made during the time of testing.

For M&R5, the test manager reviewed and analyzed the Bell Atlantic provided documentation used to assist both CLECs and Resellers in their efforts to work with Bell Atlantic to resolve customer troubles. This review focused on the following types of information:

- CLEC Handbook
- Resale Handbook
- RETAS CLEC Student User Guide (SUG)
- RETAS Reseller Student User Guide
- RETAS Online Help Facility
- Bell Atlantic Trouble Administration Business Rules

Interviews with document contributors and document owners were used to evaluate criteria detail.

2.0 Methodology

This section summarizes the test methodology.

2.1 Business Process Description

Bell Atlantic provides two categories of documentation that describe, at a high level, the descriptions of maintenance and repair processes as they relate to wholesale customer interaction. These documents, CLEC and Resale Handbooks, are written as reference guides. The trouble administration sections of each Handbook contain descriptions of the maintenance and repair processes, work center names, and contact numbers.

Repair and Trouble Administration System (RETAS) is a web-based graphic user interface that allows wholesale customers to interface directly with Bell Atlantic's core factory maintenance and repair systems. It is intended to be the primary means of creating, monitoring, modifying, and closing trouble tickets within Bell Atlantic's core factory maintenance and repair systems.

The RETAS Student User's Guides for Resellers and CLECs are training and reference guides for students who enroll in Bell Atlantic's RETAS training course. Trouble Administration business rules are provided to facilitate the use of the Web GUI for Trouble Administration functionality.

The maintenance and repair documentation management process includes procedures for version control, document review channels, the update of distribution lists, the dissemination of document change information, and the scheduling of documentation updates.

2.2 Scenarios

Scenarios were not applicable to this test.

2.3 Test Targets & Measures

The test target was Maintenance and Repair Documentation created and distributed by Bell Atlantic to CLECs and Resellers for use in maintenance and repair activities. Processes, sub-processes, evaluation measures, and associated test cross-reference numbers are summarized in the following table. The last column, "Test Cross-Reference," indicates where the particular measures are addressed in Section 3.1 "Results & Analysis."

Table 5-1: Test Target Cross-Reference

Process	Sub-Process	Evaluation Measure	Test Cross-Reference
M&R Documentation	RETAS CLEC Student User Guide	Document Structure and Format (Clarity), Document Accuracy and Completeness	MR-5-1-1, MR-5-1-2, MR-5-1-3, MR-5-1-4, MR-5-1-5 through MR-5-1-18
M&R Documentation	RETAS Resale Student User Guide	Document Structure and Format (Clarity), Document Accuracy and Completeness	MR-5-2-1, MR-5-2-2, MR-5-2-3, MR-5-2-4, MR-5-2-5 through MR-5-2-18
M&R Documentation	RETAS Online Help	Document Structure and Format (Clarity), Document Accuracy and Completeness	MR-5-3-3, MR-5-3-4, MR-5-3-1, MR-5-3-2
M&R Documentation	CLEC Handbook	Document Structure and Format (Clarity), Document Accuracy and Completeness	MR-5-4-1 through MR-5-4-8, MR-5-4-9 through MR-5-4-14

Process	Sub-Process	Evaluation Measure	Test Cross-Reference
M&R Documentation	Resale Handbook	Document Structure and Format (Clarity), Document Accuracy and Completeness	MR-5-5-1 through MR-5-5-8, MR-5-5-9 through MR-5-5-14
M&R Documentation	Trouble Administration Business Rules	Document Structure and Format (Clarity), Document Accuracy and Completeness	MR-5-6-1 through MR-5-6-7, MR-5-6-8 through MR-5-6-20

2.4 Data Sources

The data collected for the test are summarized in the table below.

Table 5-2: Data Sources for M&R Documentation Review

Document	File Name	Location in Work Papers	Source
Bell Atlantic Training Manager Interview Summary	Hard Copy	MR-5-A-1	KPMG Consulting
CLEC Handbook	CD-ROM	MR-5-B (Entire Binder)	Bell Atlantic
Resale Handbook	Hard Copy	MR-5-C (Entire Binder)	Bell Atlantic
RETAS Resellers Student Training Guide	Hard Copy	MR-5-D (Entire Binder)	Bell Atlantic
RETAS CLEC Student Training Guide	Hard Copy	MR-5-E (Entire Binder)	Bell Atlantic
RETAS Online Help Facility	Exists in RETAS Web-GUI	N/A	Bell Atlantic
Trouble Administration Business Rules	BusinessRules2.7.pdf	MR-5-F (Entire Binder)	Bell Atlantic (Change Control release)

2.4.1 Data Generation/Volumes

This test did not rely on data generation or volume testing.

2.5 Evaluation Methods

Maintenance and Repair Documentation was reviewed and rated according to targets established by the test manager. The following is a description of the targets evaluated in the Maintenance and Repair Documentation Evaluation:

- Coverage Adequacy – Document covers all relevant topics with adequate depth,
- Explanatory Effectiveness – Document provides accurate information, process descriptions (diagrams) and/or data definitions, and
- Organization/Usability – Document is organized and provides tools that facilitate organization.

2.6 Analysis Methods

The M&R Documentation Review included a checklist of evaluation criteria developed by the test manager during the initial phase of the Bell Atlantic-Massachusetts OSS Evaluation. These evaluation criteria, detailed in the *Master Test Plan*, provided the framework of norms, standards, and guidelines for the M&R Documentation Review.

The data collected were analyzed employing the evaluation criteria referenced above.

3.0 Results Summary

This section identifies the evaluation criteria and test results.

3.1 Results & Analysis

The results of this test are presented in the tables below.

Table 5-3: M&R5 Evaluation Criteria and Results for RETAS Student User Guide for CLECs (SUG)

Test Cross-Reference	Evaluation Criteria	Result	Comments
	Document Management:		
MR-5-1-1	Responsibilities and procedures for developing, updating, and correcting the RETAS Student Users' Guide for CLECs are defined.	Satisfied	The Bell Atlantic Training Manager creates, develops, and updates all CLEC related training materials. The Bell Atlantic CLEC Training team works with the Business Rules team to develop the training curriculum.

Test Cross-Reference	Evaluation Criteria	Result	Comments
			The Bell Atlantic instructors are the authors of the individual training modules. Once developed, these modules undergo a number of peer reviews before being implemented. The Bell Atlantic CLEC Training Program makes changes to the training curriculum via feedback from many internal organizations. CLECs may submit suggestions to the Account Manager, who will notify the Bell Atlantic CLEC Training Manager.
MR-5-1-2	Responsibilities and procedures for maintaining distribution lists and distributing the RETAS Student User Guide for CLECs are defined.	Satisfied	Members of the Bell Atlantic Training Department are responsible for continually updating a Lotus Notes database with CLEC contact information. This is used to track those individuals that have been trained to use RETAS and provides the version of the SUG that was provided to each trainee. The Student User Guide is provided during RETAS training.
MR-5-1-3	Distribution procedure allows the latest version of the RETAS SUG for CLECs to be made available to interested parties in a timely manner.	Satisfied	Updates to the CLEC SUG are made as process or system changes occur. The Bell Atlantic Training Department is responsible for updating the SUGs prior to training sessions to ensure that up-to-date SUGs are used in training and distributed to CLECs in training. A version control scheme is posted on the bottom of each page (Mar-00). It is noted in the Lotus Notes database what course the student participated in and what SUG version was issued. Each CLEC is advised to get on the Bell Atlantic Change Control distribution list which keeps CLECs current by posting updates and modifications to business rules and system changes or modifications.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-5-1-4	Training is provided for use of the RETAS SUG for CLECs.	Satisfied	Bell Atlantic provides a one-week training course for CLECs to learn the business rules for ordering, provisioning and maintenance and repair. This one week course explains functions to be performed using RETAS. Bell Atlantic provides a three-day hands-on course in the use of RETAS. This class uses the SUG as a guide to make the CLEC comfortable with the system and understand the reference material.
	Structure & Format:		
MR-5-1-5	RETAS SUG for CLECs indicates the version within each document and is clear throughout the document.	Satisfied	Bell Atlantic used the following version scheme: "Bell Atlantic – Mar 00" in the RETAS SUG for CLECs. This is posted at the bottom of each page in the SUG.
MR-5-1-6	RETAS SUG for CLECs provides cross-references and has clear citations directing readers to relevant sources of additional information.	Satisfied	Contained within the SUG are contact lists for Provisioning, Billing and Collections, and Maintenance. The SUG also directs CLECs to other on-line Bell Atlantic documentation that will provide information that is used by the CLEC to conduct other business with Bell Atlantic. This information is all contained in Tab 1 Introduction. Also in Tab 2 of the SUG, Telecom Industry Services Web-site, users are directed to other resources with hot links to the appropriate Bell Atlantic website.
MR-5-1-7	BA-MA provides methods for CLECs to indicate errors or omissions in the RETAS SUG for CLECs.	Satisfied	The CLEC SUG states in Section 1.5.7 GUI Help Desk – Bell Atlantic North "For navigational and process issues… users should contact the GUI Help Desk" (telephone number is provided). There is also a reference in 1.7 System Support Help Desk to refer to Section 1.5.7.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-5-1-8	RETAS SUG for CLECs indicates scope and purpose.	Satisfied	The SUG indicates the scope and purpose of the course in Section 1, pg. 1-1, Introduction and Section 1 1.1, pg. 1-2, RETAS Student Guide Objectives. Both scope and purpose are detailed and stated.
MR-5-1-9	RETAS SUG for CLECs is logically organized (e.g., clear page numbering and section labeling, table of contents, glossary of terms, explanation of acronyms, etc.).	Satisfied	The RETAS for CLECs SUG is organized in a logical fashion with a table of contents and subject matter is partitioned into tabbed sections. Throughout the document many acronyms are explained. The SUG lacks a glossary of terms and an index. However, a glossary of terms is provided in the Handbook series and is made publicly available on the Bell Atlantic Wholesale Markets website.
	Document Content:		
MR-5-1-10	RETAS SUG for CLECs describes user access of RETAS system(s).	Satisfied	Tab 3, Section 3.1.2 How to access RETAS: Here students receive a graphical demonstration of how to access the Telecommunications Information Services (TIS) Gateway Home Page. From the TIS Gateway, CLECs can access, RETAS, Service Ordering and Pre-Ordering menus.
MR-5-1-11	RETAS SUG for CLECs defines how to navigate the system(s) (i.e., use of screen prints).	Satisfied	Throughout the SUG, screen prints and detailed explanations are used to aid the student in navigating through the TIS Gateway and RETAS.
MR-5-1-12	RETAS SUG for CLECs defines data entry fields for creating, checking status, modifying, and closing trouble tickets.	Satisfied	Tabs 3, 4 and 7 in the SUG, detail how CLECs are to use RETAS to create, modify, check status and close trouble tickets. Through the use of screen prints with data entry rules, students are informed of what the various field entries mean and what data is required for the trouble to successfully track through the repair process.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-5-1-13	RETAS Users' Guide for CLECs defines all data entry fields for diagnostic testing.	Satisfied	The SUG defines all data entry fields for the three types of diagnostic testing: ♦ MLT (Tab 3, Section 3.3.2, pg. 3-9) ♦ Delphi/Hekimian is only used in the BA-South region. (Tab 3, Section 3.7, pg. 3-36) ♦ Delphi/SARTS (Tab 3, Section 3.7.2, pg. 3–40)
MR-5-1-14	RETAS SUG for CLECs explains acceptable formats for data fields.	Satisfied	Data entry field formats are explained throughout the SUG.
MR-5-1-15	RETAS SUG for CLECs distinguishes between required and optional fields.	Satisfied	The SUG for CLECs identifies three field types: Required, Conditional and Optional. Throughout the SUG data field descriptions indicate if a response is required and if additional fields must be completed based on the initial response. Certain notes exist throughout the document that stipulate that optional fields are required for certain trouble types (i.e., Tab 3, Section 3.15.1, pg. 3-83, data entry rule: Premise Access Hours: Day).
MR-5-1-16	RETAS SUG for CLECs defines possible options after data entry (i.e., submits, view, and cancel).	Satisfied	The SUG identifies that once a ticket has been created the User can submit and view; submit and view later; and cancel (Tab 7, Section 7.5.1, pg. 7-12, Installation Status Inquiry). The SUG makes a visual reference via screen print as to what the output will look like depending on what option is selected.
MR-5-1-17	RETAS SUG for CLECs describes expected system responses/outputs.	Satisfied	The SUG describes the expected system responses/outputs via detail description and sample screen prints (Tab 4, Section 4.1.2, pg. 4-2, Status Inquiry – View Responses).
MR-5-1-18	RETAS SUG for CLECs provides description of error messages and possible steps for resolution.	Satisfied	Tab 5, RETAS Error Messages Section 5.6, pg. 5-9 and Appendix A (Tab 15, pg. 3) of the CLEC SUG identifies a detailed table with the error codes with error attributes, explanation and additional courses of action.

Table 5-4: M&R5 Evaluation Criteria and Results for RETAS Student User Guide for Resellers

Test Cross-Reference	Evaluation Criteria	Result	Comments
	Document Management:		
MR-5-2-1	Responsibilities and procedures for developing, updating, and correcting the RETAS Student Users' Guide (SUG) for Resellers are defined.	Satisfied	The Bell Atlantic Training Manager creates, develops, and updates all CLEC related training materials. The Bell Atlantic Reseller Training teams works with the Business Rules team to help develop the training curriculum. The Bell Atlantic instructors are the authors of the individual training modules. Once developed these modules undergo a number of peer reviews before being implemented. The Bell Atlantic Reseller Training Program makes changes to the training curriculum via feedback from many internal organizations. Resellers may submit their suggestions to the Bell Atlantic Account Manager, who will notify the Bell Atlantic Training Manager.
MR-5-2-2	Responsibilities and procedures for maintaining distribution lists and distributing the RETAS SUG for Resellers are defined.	Satisfied	Members of the Bell Atlantic Training Department are responsible for continually updating a Lotus Notes database with Reseller contact information. This is used to track those individuals that have been trained to use RETAS and indicates the version of the SUG that is provided each trainee. The SUG is distributed during RETAS training.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-5-2-3	Distribution procedure allows latest version of RETAS SUG for Resellers to be made available to interested parties in a timely manner.	Satisfied	Updates to the Reseller SUG are made as process or system changes occur. The Bell Atlantic Training Department is responsible for updating the SUGs prior to training sessions to ensure that up-to-date SUGs are used in training and distributed to Resellers in training. A version control scheme is posted on the bottom of each page (Version 1.0C). It is noted in the Lotus Notes database what course the student participated in and what SUG version was issued. Each Reseller is advised to get on the Bell Atlantic Change Control distribution list which keeps Resellers current by posting updates and modifications to business rules and system changes or modifications.
MR-5-2-4	Training is provided for use of RETAS SUG for Resellers.	Satisfied	Bell Atlantic provides a one-week training course for Resellers to learn the Bell Atlantic business rules (ordering, provisioning and maintenance) where RETAS function are covered. Additionally, Bell Atlantic provides a two-day RETAS training program that covers all areas of RETAS designed for actual users. This RETAS training uses the SUG as a guide to make trainees more familiar.
	Structure & Format:		
MR-5-2-5	RETAS SUG for Resellers version is indicated within each document and is clear throughout the document.	Satisfied	A version numbering system is used throughout this SUG. The footer at the bottom of each page identifies that the current document is Version 1.0C.
MR-5-2-6	RETAS SUG for Reseller provides cross-references and has clear citations directing readers to relevant sources of additional information.	Satisfied	Contained within the SUG are contact lists for Provisioning, Billing and Collections, and Maintenance. The SUG also directs Resellers to other online Bell Atlantic documentation that will provide information that can be used by the Reseller to conduct other business with Bell Atlantic. This information is all contained in Tab 1 Introduction.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-5-2-7	BA-MA provides methods for Resellers to indicate errors or omissions in the RETAS SUG for Reseller.	Satisfied	The SUG states in Section 1.9.9 System Support Help Desk that, " For navigational and process issues, users should contact the GUI Help Desk located in the Newark TISOC" (telephone number is provided).
MR-5-2-8	RETAS SUG for Resellers indicates scope and purpose.	Satisfied	The SUG indicates the scope and purpose of the course in sections 1.1 RETAS Student Guide Objectives and Section 1.2 RETAS Training Class Objectives. Both scope and purpose are detailed and stated.
MR-5-2-9	RETAS SUG for Resellers is logically organized (e.g., clear page numbering and section labeling, table of contents, glossary of terms, explanation of acronyms, etc.).	Satisfied	The RETAS for Resellers SUG is organized in a logical fashion with a table of contents and subject matter is partitioned into tabbed sections. Throughout the document many acronyms are explained. The SUG lacks a glossary of terms and an index. However, a glossary is provided in the Handbook series which is made publicly available on Bell Atlantic's Wholesale Markets website.
	Document Content:		
MR-5-2-10	RETAS SUG for Resellers describes user access of RETAS system(s).	Satisfied	Students are instructed on user access in Section 1.5 Accessing the Website - the TIS Gateway. Specific information on how to progress through the various security requirements and user log-on procedures is provided.
MR-5-2-11	RETAS SUG for Resellers defines how to navigate the system(s) (i.e., use of screen prints).	Satisfied	Throughout the SUG, screen prints and detailed explanations are used to aid the student in navigating through the TIS Gateway.
MR-5-2-12	RETAS SUG for Resellers defines data entry fields for creating, checking status, modifying, and closing trouble tickets.	Satisfied	In the SUG Tabs 4 – 7 detail how Resellers are to use RETAS to create, modify, check status and close trouble tickets. Through the use of screen prints with data entry rules, students are informed what the various field entries mean and what data is required for the trouble to successfully track through the repair process.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-5-2-13	RETAS Users' Guide for Resellers defines all data entry fields for diagnostic testing.	Satisfied	The SUG defines all data entry fields for the three types of diagnostic testing: ♦ Mechanized Loop Testing (MLT) (Tab 3, pg. 5) ♦ Delphi/Hekimian diagnostic testing (Tab 11, pg. 2) ♦ For Switched Access Remote Testing System (SARTS) testing, the SUG describes when SARTS testing will be applicable and the expected results to be returned (Tab 10, pg. 3)
MR-5-2-14	RETAS SUG for Resellers explains acceptable formats for data fields.	Satisfied	Data entry field formats are explained throughout the SUG. (i.e., Trouble Ticket Create Request POTS, Tab 4, pg. 2, Circuit ID data entry field, stipulates referencing Appendix E for the accepted format).
MR-5-2-15	RETAS SUG for Resellers distinguishes between required and optional fields.	Satisfied	The SUG for Resellers identifies three field types: Required, Conditional and Optional. Throughout the SUG, data field descriptions indicate if a response is required and if additional fields must be completed based on the initial response. Certain notes exist throughout the document that stipulate optional field requirement for certain trouble types (i.e., Tab 5, pg. 6, data entry rule: Bell Atlantic Trouble Ticket Number).
MR-5-2-16	RETAS SUG for Resellers defines possible options after data entry (i.e., submits, view, and cancel).	Satisfied	The SUG identifies that once a ticket has been created the user can submit and view, submit and view later, or cancel (Tab 4, pg. 20). The SUG makes no visual reference via screen print as to what the output will look like depending on what option is selected. Tab 1, pg. 15, does offer a brief explanation of what the response would be when selecting "submit and view."
MR-5-2-17	RETAS SUG for Resellers describes expected system responses/outputs.	Satisfied	The SUG describes the expected system responses/outputs via detail description and sample screen prints (Tab 5, pg. 3, Trouble Ticket Modify Recent Transactions).

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-5-2-18	RETAS SUG for Resellers provides description of error messages and possible steps for resolution.	Satisfied	Appendix A of the Reseller SUG presents a detailed table with the error codes with error attributes, explanation and additional courses of action (Tab 15, pg. 3).

Table 5-5: M&R5 Evaluation Criteria and Results for RETAS Online Help Facility

Test Cross-Reference	Evaluation Criteria	Result	Comments
	Content:		
MR-5-3-1	The RETAS Online Help Facility defines data entry fields for diagnostic testing and creating, checking status, modifying, and closing trouble tickets.	Satisfied	The help screens provide definitions for required, conditional and optional fields for each transaction. For each option, users can expect to see: sequence number, field, occurrences allowed, usage, type, and notes and conditions.
MR-5-3-2	The RETAS Online Help Facility provides a description of error messages and possible steps for resolution.	Satisfied	The User is directed to review the Trouble Administration Error Codes Table, which is located in Appendix A of the Resellers and CLEC SUG.
	Structure & Format:		
MR-5-3-3	Navigation aids are provided as part of or along with the RETAS Online Help Facility for Users.	Satisfied	The Online RETAS Help Facility contains navigation aids. These aids are described in detail in both the CLEC SUG, Tab 3 and the Resellers SUG, Tab 1.
MR-5-3-4	The RETAS Online Help Facility provides cross-reference to other sources for completeness.	Satisfied	Under the option menu, the RETAS Online Help Facility navigation tool allows the user to select related links. These links allow access to TIS documentation, Host Bill DSL and a Question and Answer page. This access allows the user to obtain quick answers to questions about Bell Atlantic's services, systems, and frequently asked questions.

Table 5-6: M&R5 Evaluation Criteria and Results for CLEC Handbook (Volume III)

Test Cross-Reference	Evaluation Criteria	Result	Comments
	Structure & Format:		
MR-5-4-1	CLEC Handbook states scope and purpose of M&R activities.	Satisfied	The CLEC/Reseller Handbook provides scope and purpose of M&R activities and enumerates CLEC/Bell Atlantic responsibilities. (Section 8 of the CLEC/Resellers Handbook, Volume III).
MR-5-4-2	CLEC Handbook describes M&R process.	Satisfied	A high-level overview of M&R is provided in the CLEC/Resellers handbook Section 8.1 Trouble Administration.
MR-5-4-3	CLEC Handbook is logically organized (e.g., clear page numbering and section labeling, table of contents, glossary of terms, explanation of acronyms, etc.).	Satisfied	The document is logically organized with clear page numbering and section labels. The document also contains a glossary, which explains acronyms and other terms.
MR-5-4-4	CLEC Handbook describes M&R processes for which it is applicable.	Satisfied	Explanation of M&R is given in the CLEC handbook in Section 8.1 Trouble Administration.
MR-5-4-5	CLEC Handbook provides M&R contact list.	Satisfied	The handbook provides a 24/7 telephone number for the RCMC for M&R related issues.
MR-5-4-6	CLEC Handbook provides cross-references to other sources for completeness.	Satisfied	The document references the RETAS SUG and points to other sources where appropriate.
MR-5-4-7	CLEC Handbook provides procedures for customers to submit corrections or omissions.	Satisfied	Comments regarding the handbook can be submitted via electronic form to Bell Atlantic from a link on the TIS website as well as a link from the CD ROM package.
MR-5-4-8	Training is offered with CLEC Handbook.	Satisfied	RETAS training is offered to CLECs. A link to the registration site is provided from the handbook.

Test Cross-Reference	Evaluation Criteria	Result	Comments
	Content:		
MR-5-4-9	CLEC Handbook includes a process map.	Satisfied	A process map description is located in Section 8.1 of the CLEC handbook Volume III.
MR-5-4-10	CLEC Handbook contains methods and procedures to execute M&R process.	Satisfied	Section 8 describes the methods and procedures for executing M&R processes.
MR-5-4-11	Documented methods and procedures contain enough detail and clarity to execute M&R process.	Satisfied	Bell Atlantic requires RETAS training for using the RETAS system. Once trained on RETAS, users are able to navigate the documentation for methods and procedures needed to execute the M&R process.
MR-5-4-12	CLEC Handbook includes expected results of M&R process and cycle time.	Satisfied	The Bell Atlantic CLEC handbook Series September 1999 – Section 8.3.1 Repair Trouble Administration System (RETAS) identifies the expected results of the M&R process and what the cycle time should be. MLT test transactions are generally completed within two minutes. Trouble create, modify, status, history and close transactions are generally completed within 30 seconds.
MR-5-4-13	CLEC Handbook describes the exception handling process and provides contact information for out of the ordinary occurrences.	Satisfied	The CLEC Handbook Volume III, Section 8 provides information on "Abnormal Events" and "Disaster Recovery" situations. Bell Atlantic points of contact are also provided in this section.
MR-5-4-14	CLEC Handbook identifies roles and responsibilities for trouble administration of the M&R process.	Satisfied	In Section 8.3, Bell Atlantic roles and responsibilities are identified as they relate to RETAS, Security, Audit procedures, Fraud and Abuse, misdirected Calls, RCMC center, Network Surveillance Administration Center (NSAC), Abnormal Events, and Disaster Recovery.

Table 5-7: M&R5 Evaluation Criteria and Results for Reseller Handbook (Volume III)

Test Cross-Reference	Evaluation Criteria	Result	Comments
	Structure & Format:		
MR-5-5-1	Reseller Handbook states scope and purpose of M&R activities.	Satisfied	The Reseller Handbook provides scope and purpose of M&R activities and enumerates Reseller/Bell Atlantic responsibilities (Section 6.2 The Reseller's Role in Trouble Administration of the Resellers Handbook, Volume III).
MR-5-5-2	Reseller Handbook describes M&R process.	Satisfied	A high-level overview of M&R is provided in the Reseller's Handbook, Volume III.
MR-5-5-3	Reseller Handbook is logically organized (e.g., clear page numbering and section labeling, table of contents, glossary of terms, explanation of acronyms, etc.).	Satisfied	The document is logically organized with clear page numbering and section labels. The document contains a table of contents as well as a glossary, which explains acronyms and other telecom terms.
MR-5-5-4	Reseller Handbook describes M&R processes for which it is applicable.	Satisfied	Explanation of M&R is given in the Reseller's Handbook in Section 6.1 Trouble Administration.
MR-5-5-5	Reseller Handbook provides a contact list.	Satisfied	The handbook provides contact numbers for the RCMC and RETAS system administration for M&R related issues.
MR-5-5-6	Reseller Handbook provides cross-references to other sources for completeness.	Satisfied	The document points to other sources where appropriate. References and phone numbers are provided to the System Support Help Desk, the Regional CLEC Maintenance Center (RCMC), and the Wholesale Markets website.
MR-5-5-7	Reseller Handbook provides procedures for customers to submit corrections or omissions.	Satisfied	Users are instructed to contact the RCMC.
MR-5-5-8	Training is offered with Reseller Handbook.	Satisfied	RETAS training is offered to Resellers. A link to the registration site is provided from the handbook.

Test Cross-Reference	Evaluation Criteria	Result	Comments
	Content:		
MR-5-5-9	Reseller Handbook includes a process map.	Satisfied	A process map description is located in Section 6.1 of the Reseller Handbook Volume III.
MR-5-5-10	Reseller Handbook contains methods and procedures to execute M&R process.	Satisfied	The Reseller Handbook, Section 6 describes the methods and procedures for executing M&R processes.
MR-5-5-11	Documented methods and procedures contain enough detail and clarity to execute M&R process.	Satisfied	Bell Atlantic requires RETAS training for using the RETAS system. Once trained on RETAS, users are able to navigate the documentation for methods and procedures needed to execute the M&R process.
MR-5-5-12	Reseller Handbook includes expected results of the M&R process and cycle time.	Satisfied	The Bell Atlantic Reseller's Handbook Volume III, Section 6.2 RETAS System, identifies the expected results of the M&R process and related cycle times. The Handbook states that MLT test transactions are generally completed within two minutes. Trouble create, modify, status, history and close transactions are generally completed within 30 seconds.
MR-5-5-13	Reseller Handbook describes the exception handling process and provides contact information for out of the ordinary occurrences.	Satisfied	The Reseller Handbook describes the exception handling process and provides contact information in Volume III, Section 6.5 Regional CLEC Maintenance Center Support.
MR-5-5-14	Reseller Handbook identifies roles and responsibilities for trouble administration of the M&R process.	Satisfied	The Reseller Handbook identifies roles and responsibilities for trouble administration of the M&R process in Volume III, Section 6.1 Trouble Administration.

Table 5-8: M&R5 Evaluation Criteria and Results for Trouble Administration Business Rules

Test Cross-Reference	Evaluation Criteria	Result	Comments
	Structure Elements:		
MR-5-6-1	Document version is indicated and clear throughout the document.	Satisfied	Version number is identified on the cover page with a corresponding "Release Date" and "Publication Date." The publication date is repeated on each and every page of the document.
MR-5-6-2	Document provides cross-references and has clear citations directing readers to relevant sources of additional information.	Satisfied	An overview of other documentation available to wholesale customers is provided on page 1-7 of the document. This overview provides the wholesale user with the location of all referenced documentation as well as a brief explanation of the contents. The "Notes and Conditions" column of the document references the user to other appropriate sections of the document. Additionally, specific documents that are publicly provided elsewhere are referenced. For example, when the notes and conditions alert the user to the possibility of receiving an error, the error code document located in the Bell Atlantic TIS website is referenced.
MR-5-6-3	Document instructs users how to notify Bell Atlantic about document errors or omissions.	Satisfied	This document is meant to be used in conjunction with RETAS training and the Student User Guides. Although Trouble Administration Business Rule document itself does not specifically instruct users of how to notify Bell Atlantic regarding errors/omissions, it is noted that it "does not replace any training materials, training seminars or existing documentation that has been written on the subject of Trouble Administration (pg. 1-5)." Both the Student User Guides and the Handbook series direct users on whom and how to contact in regards to RETAS errors/issues.

Test Cross-Reference	Evaluation Criteria	Result	Comments
			Additionally, there is a RETAS Business Rule Change Log in the beginning of the document. This provides the following information regarding a change to the Trouble Administration Business Rules: ♦ Transaction Acronym ♦ Transaction Name ♦ Transaction Description ♦ Affected Fields ♦ Previous Field # ♦ New Field # ♦ Change Management # ♦ Flash Announcement # ♦ Description of Change
MR-5-6-4	Document correctly indicates scope and purpose.	Satisfied	The "General" section of the document identifies the purpose, topics covered, regions covered, time references, field descriptions, alpha/numeric justification, and legend (pgs. 1-4 to 1-6).
MR-5-6-5	Document contains table of contents.	Satisfied	A table of contents covering the "Trouble Administration Process" portion of the document, as well as the appendices is provided.
MR-5-6-6	Document is logically organized with clear page numbering and section labeling.	Satisfied	The document is organized according to RETAS action step. Each page is numbered. Each section is marked by a header which corresponds to the table of contents.
MR-5-6-7	Document contains an adequate glossary of terms, including explanations of relevant acronyms.	Satisfied	Acronyms are explained in both the "Valid Entry" and "Notes and Conditions" columns. Additionally, there are appendices which serve to explain acronyms for the following: ♦ Trouble Type Code ♦ Circuit ID Formats ♦ Test Result Codes ♦ Override Handle Codes ♦ Status Inquiry Codes ♦ Disposition Codes ♦ Cause Codes

Test Cross-Reference	Evaluation Criteria	Result	Comments
	Process Elements:		
MR-5-6-8	Document contains methods and procedures to correctly execute processes.	Satisfied	Requirements and results are given for each and every field of each and every possible RETAS transaction. Methods and procedures for setup and access of Web GUI interfaces are covered in the Bell Atlantic Local Services Common Web GUI User Guide. This series of documents is located at the following URLs: www.bellatlantic.com/wholesale/html/pdfs/v3-4_Section1.pdf www.bellatlantic.com/wholesale/html/pdfs/v3_4_Section1.pdf Methods and procedures for using the RETAS system and performing all associated trouble administration functions are located in the Student User Guides and the Handbooks. The Reseller and CLEC handbooks can be found at the following URLs respectively: www.bellatlantic.com/wholesale/html/handbooks/resale/r3toc.htm www.bellatlantic.com/wholesale/html/handbooks/clec/c3toc.htm (As URL information is subject to change please refer to the Bell Atlantic Wholesale Markets website for the latest information on document availability May 1, 2000).
MR-5-6-9	Document identifies the suppliers and customers (inputs/outputs) of the process.	Satisfied	The document covers suppliers and customers from a physical as well as systems perspective. From a physical perspective, customers and suppliers are identified in the "General" section (pgs. 1-4 to 1-7). From a systems perspective, customers and suppliers (inputs/outputs) are identified in the "valid entry" and "notes and conditions" columns respectively.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-5-6-10	Documentation includes the expected results of process and cycle times.	Satisfied	The "Notes and Conditions" column for RETAS response transactions identifies the expected response for each field that appears. For example, the DELPHI/SARTS Special Service Test Response, field 10 "test name," notes and conditions column indicates that this field will return an indication of the "specific SARTS sub-test." The "Field Notes" alerts the user that "this information is provided for each leg of the circuit that is tested." The "Valid Entry Notes" alerts the user that an example of this could be "Loop Back." (The example above can be found on page 9 of 113 of the Trouble Administration Business Rules published April 2000). Cycle times are not specified in this document. Cycle time metrics can be found in the Carrier-to-Carrier Guidelines (not all RETAS transactions have published and expected cycle times).
	System Elements:		
MR-5-6-11	Document correctly defines all data entry fields.	Satisfied	Each field of each transaction contains a data description, length required, type, usage, and possible valid entries.
MR-5-6-12	Document and accurately explains acceptable formats for data fields.	Satisfied	Each field of each transaction contains a data description, length required, type, usage, and possible valid entries.
MR-5-6-13	Document correctly distinguishes between required and optional fields.	Satisfied	The "Usage" column describes whether the entry is required or optional for each field of each possible RETAS transaction.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-5-6-14	Document adequately describes expected system responses/outputs.	Satisfied	The "Notes and Conditions" column for RETAS response transactions identifies the expected response for each field that appears. For example, the DELPHI/SARTS Special Service Test Response, field 10 "test name," notes and conditions column indicates that this field will return an indication of the "specific SARTS sub-test." The "Field Notes" alerts the user that "this information is provided for each leg of the circuit that is tested." The "Valid Entry Notes" alerts the user that an example of this could be "Loop Back." (The example above can be found on page 9 of 113 of the "Trouble Administration Business Rules" published April 2000).
MR-5-6-15	Document provides adequate descriptions of error messages.	Satisfied	The document references the "list of possible values provided in [the] error code document on the Bell Atlantic TIS Website." This can be found at the following URL: www.bellatlantic.com/wholesale/html/pdfs/EMSG00preorder.pdf (As URL information is subject to change please refer to the Bell Atlantic Wholesale Markets website for the latest information on document availability May 1, 2000).

F. Test Results: M&R Work Center Support Evaluation (M&R6)

1.0 Description

The M&R Work Center Support Evaluation is a comprehensive operational analysis of the work center/help desk processes developed by Bell Atlantic, and adherence to common Support Center/Help Desk procedures. These processes and procedures provide support to CLECs with questions, problems, and issues related to wholesale trouble reporting and repair operations. Work center and help desk processes include creating trouble tickets, managing and monitoring open trouble tickets, resolving troubles, closing trouble tickets, and providing trouble ticket status information. Basic functionality, performance and escalation procedures are evaluated.

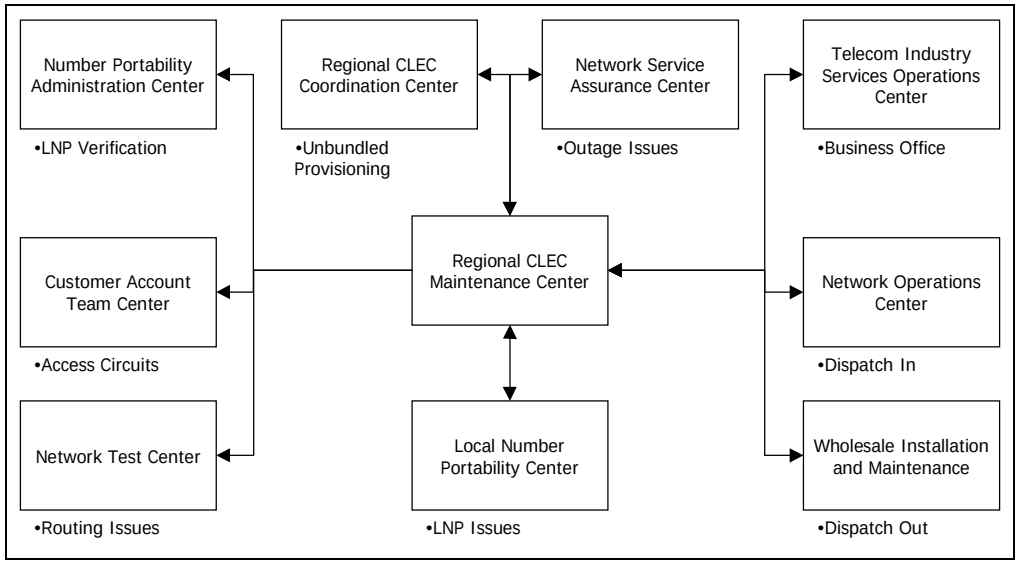
2.0 Methodology

This section summarizes the test methodology.

2.1 Business Process Description

Figure 6.1 depicts the relationships that the Regional CLEC Maintenance Center (RCMC) has with other organizations in the Bell Atlantic organization. The single or bi-directional arrows identify who is responsible for initiating contact. Additionally, business functions are illustrated below the organization.

Figure 6-1: RCMC Relationships



The RCMC records and responds to CLEC questions regarding trouble tickets for all Bell Atlantic Regions. It is the single point of contact for CLECs with maintenance and repair concerns. All calls coming into the RCMC are logged in the Automatic Call Distributor (ACD), which captures the time and duration of each call. During trouble ticket creation, Repair Service Clerks (RSCs) log each trouble report into the internal Bell Atlantic system LMOS (Loop Maintenance Operations System) for POTS or WFA (Work Force Administration) System for Specials which assigns each ticket a tracking number. Relevant customer information and a description of the problem are required for trouble ticket creation. The ticket is then either closed out if the problem is resolved immediately, or routed to the appropriate center for repair. The procedure requires trouble tickets to be closed upon resolution and for the closure date to be entered into the database by the servicing technician or the Maintenance Control Organization (MCO[104]).

2.2 Scenarios

Scenarios were not applicable to this test.

2.3 Test Targets & Measures

The test targets are the Work Center/Help Desk support functions. Processes, sub-processes, evaluation measures, and associated test cross-reference numbers are summarized in the following table. The last column, "Test Cross-Reference," indicates where the particular measures are addressed in Section 3.1 "Results & Analysis."

The test targets and measures utilized are summarized below. Specific evaluation measures are presented in the evaluation summaries.

Table 6-1: Test Target Cross-Reference

Process	Sub-Process	Evaluation Measure	Test Cross-Reference
Call Processing	Call Answer	Timeliness	MR-6-8, MR-6-10, MR-6-13
Call Processing	Call Logging	Accuracy, Completeness, Consistency	MR-6-13, MR-6-15, MR-6-16

[104] The MCO is the acronym for any Bell Atlantic organization that created the trouble ticket and is the owner of that trouble.

Process	Sub-Process	Evaluation Measure	Test Cross-Reference
Call Processing	Prioritization	Existence, Effectiveness	MR-6-1, MR-6-2, MR-6-3, MR-6-5, MR-6-6
Problem Tracking and Resolution	Documentation	Clarity, Accuracy	MR-6-1, MR-6-2, MR-6-3
Problem Tracking and Resolution	Identify and Resolve	Timeliness, Accuracy, Completion, Consistency	MR-6-8, MR-6-18
Problem Tracking and Resolution	Track Problem	Existence, Effectiveness	MR-6-4
Problem Tracking and Resolution	Log Status and Close	Accuracy, Completion, Consistency	MR-6-4, MR-6-5, MR-6-6
Problem Tracking and Resolution	Notify Customer	Timeliness	MR-6-8
Expedite/ Escalation Procedures	Documentation	Existence, Clarity, Accuracy	MR-6-5, MR-6-6, MR-6-12
Expedite/ Escalation Procedures	Call Answer	Accessibility, Timeliness	MR-6-10
Expedite/ Escalation Procedures	Escalation Logging	Accuracy	MR-6-16
Expedite/ Escalation Procedures	Identify and Resolve	Timeliness	MR-6-16
Expedite/ Escalation Procedures	Log Status and Close	Accuracy	MR-6-12, MR-6-13, MR-6-18
Expedite/ Escalation Procedures	Notify Customer	Timeliness	MR-6-2, MR-6-8
Work Center Procedures	Notify Customer	Clarity, Accuracy, Completeness	MR-6-1 through MR-6-17
Manual Handling – Resale	Notify Customer	Accuracy, Timeliness, Consistency	MR-6-3 through MR-6-6, MR-6-8 through MR-6-11, MR-6-13 through MR-6-16, MR-6-18, MR-6-19
Manual Handling – UNE/UNE-P	Notify Customer	Accuracy, Timeliness, Consistency	MR-6-3 through MR-6-6, MR-6-8 through MR-6-11, MR-6-13 through MR-6-16, MR-6-18, MR-6-19

2.4 Data Sources

The data collected for the test are summarized in the table below.

Table 6-2: Data Sources for M&R Work Center Support Evaluation

Document	File Name	Location in Work Papers	Source
Center Descriptions & Contacts	Hard Copy	MR-6-A-1	Bell Atlantic
Regional RCMC Organization Chart	Hard Copy	MR-6-A-2	Bell Atlantic
Trouble Monitoring and Escalation Process	Hard Copy	MR-6-A-3	Bell Atlantic
Expanded Extended Loop Job Aid for Maintenance - North	Hard Copy	MR-6-A-4	Bell Atlantic
WFA-C Maintenance Appointments	Hard Copy	MR-6-A-5	Bell Atlantic
Service Manager Assignments	Hard Copy	MR-6-A-6	Bell Atlantic
Trouble Close Out Process	Hard Copy	MR-6-A-7	Bell Atlantic
RCMC Coordinator's Guide DS3 Unbundled Loop Service	Hard Copy	MR-6-A-8	Bell Atlantic
WFA-C Trouble Report Procedure for Specials (OSSTRE Screen Entry)	Hard Copy	MR-6-A-9	Bell Atlantic
LNP Trouble Isolation	Hard Copy	MR-6-A-10	Bell Atlantic
TXNU and TXSU Trouble Ticket Entry and Handoff in WFA-C RCMC and RCCC (North)	Hard Copy	MR-6-A-11	Bell Atlantic
Procedures for Use of WFA/C – Midatlantic	Hard Copy	MR-6-A-12	Bell Atlantic
EEL – Transport (Backbone) and M Loops – South Maintenance	Hard Copy	MR-6-A-13	Bell Atlantic

Document	File Name	Location in Work Papers	Source
RCMC Operations Plan 4Q99 through 2000	Hard Copy	MR-6-A-14	Bell Atlantic
RCMC Force Model 1999-2000	Hard Copy	MR-6-A-15	Bell Atlantic
Regional CLEC Operations Contact List & Escalation Flow	Hard Copy	MR-6-A-16	Bell Atlantic
Vendor Meet Process for UNE Loops – Maintenance North and South	Hard Copy	MR-6-A-17	Bell Atlantic
Secondary Dispatch Process	Hard Copy	MR-6-A-18	Bell Atlantic
ACD Workgroup (screen print example)	Hard Copy	MR-6-A-19	Bell Atlantic
Pinacle ACD Report (two hour view for example)	Hard Copy	MR-6-A-20	Bell Atlantic
RCMC Major System Failure Procedures	Hard Copy	MR-6-A-21	Bell Atlantic
RCMC Quality Assurance Plan	Hard Copy	MR-6-A-22	Bell Atlantic
Monthly Report Card (employee example)	Hard Copy	MR-6-A-23	Bell Atlantic
RCMC Weekly Performance Report	Hard Copy	MR-6-A-24	Bell Atlantic
Jeopardy Management Escalation Process for Trouble Tickets	Hard Copy	MR-6-A-25	Bell Atlantic
Ratio of Workers per Tour (one week example)	Hard Copy	MR-6-A-26	Bell Atlantic
CLEC Check Worksheet	Hard Copy	MR-6-A-27	Bell Atlantic
WFA-C Check Sheet for the North	Hard Copy	MR-6-A-28	Bell Atlantic

Document	File Name	Location in Work Papers	Source
RCMC Escalation Report	Hard Copy	MR-6-A-29	Bell Atlantic
RCMC Weekly Performance Report "Cumulative"	Hard Copy	MR-6-A-30	Bell Atlantic
RCMC Weekly Performance Report	Hard Copy	MR-6-A-31	Bell Atlantic

2.4.1 Data Generation/Volumes

This test did not rely on data generation or volume testing.

2.5 Evaluation Methods

The Maintenance and Repair Work Center Support Evaluation (M&R6) was conducted using process interviews and reviews of related Bell Atlantic documentation requested by the test manager.

The following provides additional detail on the procedures used to evaluate Maintenance and Repair Work Center Support:

- Process Interviews – interviews and observations were conducted at the Regional CLEC Maintenance Center.
- Documentation Review - a documentation review was conducted of all documents provided by Bell Atlantic for the Maintenance and Repair Work Center Support evaluation (See "Data Sources for Work Center Support" table above).

2.6 Analysis Methods

The M&R Work Center Support Evaluation included a checklist of evaluation criteria developed by the test manager during the initial phase of the Bell Atlantic-Massachusetts OSS Evaluation. These evaluation criteria, detailed in the *Master Test Plan*, provided the framework of norms, standards, and guidelines for the M&R Work Center Support Evaluation.

The data collected were analyzed employing the evaluation criteria referenced above.

3.0 Results Summary

This section identifies the evaluation criteria and test results.

3.1 Results & Analysis

The results of this test are presented in the table below.

Table 6-3: M&R6 Evaluation Criteria and Results

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-6-1	RCMC process responsibilities and activities are clearly defined and documented.	Satisfied	The "Center Descriptions & Contacts – Regional CLEC Organizations" document defines and documents responsibilities for the RCMC. Specific activities for RCMC personnel are defined and documented in Repair Service Clerk (RSC) training manuals, as well as the various Job Aid documents that are made available to all RCMC staff via the Bell Atlantic corporate intranet. General information regarding the process responsibilities and activities of the RCMC are made available to the public through the CLEC and Reseller Handbook Series (Volume III). For the CLEC Handbook, information regarding RCMC process responsibilities and activities can be found in the following sections: ♦ Volume III, Section 8.2, "The CLECs Role in Trouble Administration" ♦ Volume III, Section 8.3, "Bell Atlantic's Role in Trouble Administration" For the Reseller Handbook, information regarding RCMC process responsibilities and activities can be found in the following sections: ♦ Volume III, Section 6.2, "Reseller's Role in Trouble Administration" ♦ Volume III, Section 6.3, "Submitting Trouble Reports in Bell Atlantic Electronically"

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-6-2	The scope and objectives of the RCMC process are defined.	Satisfied	RCMC Specific scope and objectives are outlined in the "Center Descriptions & Contacts – Regional CLEC Organizations" document. Additionally, general scope and objectives for the RCMC are made publicly available in the "Handbook" series as noted in the comments section of MR-6-1 above. Service level objectives and commitment levels exist and are posted within the call centers for all employees at the RCMC to view. The specific scope and objectives of the multiple RCMC processes are identified in the corresponding Job Aid files that are made available to all staff on the Bell Atlantic intranet. Observed contents related to scope and objective definition of Job Aid documents include the following: ♦ Background ♦ Issuing organization ♦ Supplemented documents ♦ Effective Date ♦ Contact Information ♦ Definition ♦ Goal ♦ Process ♦ Examples ♦ Expectations
MR-6-3	Specific processes exist for managers and technicians to track different types of reported troubles.	Satisfied	Trouble reports created are assigned a number that is used for real time tracking.

Test Cross-Reference	Evaluation Criteria	Result	Comments
			In addition, troubles are categorized into three types: Resale, UNE and LNP. An online view is available that allows RSCs and/or management to view the number of troubles reported by them, by type for that day. This information is consolidated into the NORD database which provides a reporting tool that managers review weekly for tracking purposes as well as for Carrier-to-Carrier metric reporting.
MR-6-4	RCMC processes include a standard method for logging calls.	Satisfied	Incoming calls are automatically logged by the Automated Call Distribution (ACD) system. The ACD system logs call duration, total calls received and incoming calls per hour.
MR-6-5	Procedures exist to address errors and exceptions made by RCMC representatives.	Satisfied	Specifically, errors and exceptions are addressed as related to processes and tasks performed by the RSCs in the RCMC. Corresponding procedures to address issues can be found in the individual Job Aid documents that are distributed to RCMC representatives through the corporate intranet. Specific references to the handling of errors are contained in the following documents: ♦ Trouble Monitoring and Escalation Process ♦ Escalation Policy (WFA circuits) – Maintenance RCMC (RCO-99-1080) ♦ Trouble Close-Out Process ♦ TXNU & TXSU Trouble Close-Out in WFA/C (RCO-99-1004) ♦ RCMC Quality Assurance Plan

Test Cross-Reference	Evaluation Criteria	Result	Comments
			Generally, the Jeopardy Management Group (JMG) within the RCMC is responsible for screening all trouble reports in order to manage and resolve errors. Upon viewing an error, the screeners in the JMG will fix the error and contact the appropriate manager in order to have the issue addressed with the person who made the mistake. Each error is to be reviewed in this manner in order to reduce future errors.
MR-6-6	RCMC processes detail the handling of expedites and escalations.	Satisfied	A formal escalation procedure for POTS, UNE loops and vendor meets was established on January 13, 2000 for internal escalations made by the Jeopardy Management Group. This procedure details first, second and third level escalation criteria as well as proper logging methodologies. This process is published on the intranet for Jeopardy Management Group screeners to reference. Formal escalations are logged in a Lotus Notes database. Standard escalation procedures exist for critical customers such as medical clients, police and fire fighting organizations. CLEC escalation procedures are both provided in initial CLEC training, as well as provided in Job Aid documents distributed through the corporate intranet. This documentation includes the following: ♦ Trouble Monitoring and Escalation process – RCMC ♦ Escalation Policy (WFA circuits) – Maintenance RCMC (RCO-99-1080)

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-6-7	Procedures exist at the RCMC for maintaining security and integrity of data access controls.	Satisfied	Secure IDs and passwords are required for CLEC access of the trouble reporting system RETAS. Bell Atlantic RSCs have read only access to CLEC RETAS information and need the CLEC's password to gain this access. The other M&R systems such as WFA/C and LMOS require the RSCs to enter passwords to gain access. A lockout mechanism exists that requires a person to reestablish their password in person after a certain number of failed attempts. When an RSC receives a call and is asked to create a trouble, they are required to verify the caller's identification as well as the customer's name and address with the CLEC before they can process a trouble ticket.
MR-6-8	RCMC processes include the identification and resolution of CLEC problems.	Satisfied	The function of the RCMC is to assist the CLECs with issues surrounding trouble tickets and trouble repairs. Job Aid documentation specifically defines the procedures for isolating and identifying troubles as well as the trouble close-out and resolution process. Areas typically covered in the documentation include the following: ♦ Purpose ♦ Potential Impact ♦ Circuit Type Definition/Terms ♦ Standard Greeting ♦ WFA/C Screens ♦ Entering the Trouble Report ♦ Report Category ♦ Commitment Time ♦ WFA/DI Technician Responsibility

Test Cross-Reference	Evaluation Criteria	Result	Comments
			♦ WFA/DO Technician Responsibility ♦ Canceling a Handoff ♦ RCMC Response to Calls From Technicians ♦ Ticket Status ♦ Restore and Close-Out
MR-6-9	Complete and consistent procedures exist for closure posting.	Satisfied	Job Aid documentation specifically defines the procedures for the trouble close-out and posting process. Areas typically covered in the documentation include the following: ♦ Purpose ♦ Background ♦ No Access ♦ Status Requested ♦ Log Notes ♦ Restoring a Trouble Report ♦ Review Before Close-out ♦ Closing a Trouble Report ♦ Key Fields ♦ Trouble Codes CLECS can learn of ticket closure by calling the RCMC for status, through viewing the information in RETAS or through a closure call from a technician.
MR-6-10	Representatives at the RCMC follow standard procedures in handling customer inquiries.	Satisfied	RSCs follow standard procedures in handling CLEC inquiries. They receive initial and ongoing training in order to understand how to apply these procedures for the various trouble calls. In addition, a "CLEC Check Worksheet" exists as a script-like job aid to help guide the RSC in gathering the correct information and provide a consistent experience for the CLEC.

Test Cross-Reference	Evaluation Criteria	Result	Comments
			Set procedures for taking incoming trouble calls as well as ongoing training are being practiced. In addition, newer RSCs do utilize the worksheets provided to guide them in answering trouble report calls in a manner consistent with Bell Atlantic policy.
MR-6-11	Trouble calls are categorized into various types with standard responses for each trouble call type.	Satisfied	Troubles are categorized into three types: Resale, UNE and LNP. There is a standard set of information that is required for each trouble ticket that is created. This information is contained in various trouble report procedure and trouble ticket entry Job Aids that are made available to RSCs through the corporate intranet. Standard information for responses to all trouble types consists of the following: ♦ Circuit ID ♦ Customer name (e.g., CLEC) ♦ Reach Number ♦ Ticket # (if applicable) ♦ Trouble Description Responses and requirements for trouble entry and resolution are specific to different types of services and are located in the trouble reporting job aid for specific circuit types.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-6-12	RSCs follow procedure in the elevation of complaints to a manager and/or director.	Satisfied	Specific procedures are defined for dealing with the escalation of trouble tickets to outside organizations in the "Escalation Process for the RCMC" Job Aid. Topics covered include the following: ♦ Definition ♦ Goal ♦ Escalation Triggers ♦ Escalation Expectation ♦ Examples that Require Escalation ♦ How Escalation is Performed ♦ Handoff Process Flow Diagrams Standard procedures for dealing with internal escalations are defined in the Jeopardy Management Escalation Process document. This document describes the scope, escalation timelines and narratives required. Escalations and expedites are done at the RSC's discretion, as defined by the escalation procedure documents, or at the request of the CLEC. The escalations are sent initially to other RSCs, first level supervisors or to customer care.
MR-6-13	BA-MA RSCs log each trouble call according to established procedures.	Satisfied	Incoming calls are automatically electronically logged by the Automated Call Distribution (ACD) system. The ACD system logs call duration, total calls received and incoming calls per hour.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-6-14	The RCMC tracks the number of repeat trouble phone calls.	Satisfied	Repeat trouble calls are tracked via data transferred from the various systems into the NORD database. Weekly reports are pulled from this database comparing CLEC data to retail data in a variety of areas including repeat troubles within 30 days.
MR-6-15	RCMC identifies and tracks the number of each different "type" of customer trouble.	Satisfied	The RCMC tracks troubles by type through the use of the NORD database. Reports are generated and sent to the RCMC for use in performance measurement, forecasting, and staffing.
MR-6-16	Escalated trouble calls are logged in an acceptable format.	Satisfied	Escalations are logged in a database in Lotus Notes. This database is used by the Jeopardy Management Group to manage daily escalations and monitor trends. This allows the Jeopardy Management Group to conduct analysis of escalation information by trouble type, by CLEC, equipment, location, etc. This tracking can help in identifying issues that may exist in certain areas or categories.
MR-6-17	A complete (e.g., beginning-to-end) description of the work center process is clearly communicated and practiced.	Satisfied	A complete description of the work center process is communicated via Job Aid documentation and training. Based on RCMC staff, RSC interviews and call observation, the process is understood by the RSC's and is being practiced as defined.
	Performance Measurement and Reporting:		
MR-6-18	Process performance measures are defined and measured.	Satisfied	Center performance measures are defined by the RCMC in a definitive Quality Assurance Plan. This QA plan exists to ensure a minimum satisfactory quality indicator of 85%.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-6-18	Process performance measures are defined and measured.	Satisfied	Internal goals are set for RSC performance. At a high level, the RCMC's response target is to answer 85% of calls within 20 seconds. On an individual RSC level, performance measures used include number of calls answered, call response time, quality of service and accuracy.
MR-6-19	Complete and consistent procedures are exercised for status tracking and management reporting.	Satisfied	A series of weekly and monthly reports are generated in order to monitor and enforce the objectives set forth in the RCMC QA plan. Monthly report cards are used to assess RSC performance with regard to the performance measures set. In addition, incoming calls are monitored and reviewed randomly 4 times per month by Team Leads. Carrier-to-Carrier metrics reports are delivered to RCMC staff and analyzed weekly.

G. Test Results: Network Surveillance Support Evaluation (M&R7)

1.0 Description

The Network Surveillance Support Evaluation consisted of an analysis of the processes and operational elements associated with Bell Atlantic (BA) Massachusetts surveillance and outage notification procedures. The evaluation involved an examination of the processes followed by the Network Service Assurance Center (NSAC) and the Network Operations Center (NOC) in monitoring the Bell Atlantic network for New England operations.

As stated by Bell Atlantic in the CLEC Handbook Series, "[t]he CLEC is responsible for monitoring and responding to all of its physical and virtual collocated equipment, facilities, and SONET alarms. In addition, the CLEC is responsible for any power alarms related to its *collocated* equipment. The CLEC is not responsible for commercial power and environmental alarm indicators, which are the responsibility of Bell Atlantic."[105]

Commentary provided in the "Results and Analysis" section of this evaluation represent the employment of measurement that applies to network surveillance processes and procedures utilized for the monitoring of Bell Atlantic's own network. Areas of coverage for the surveillance of CLEC network elements are as outlined in Sections 8.2 and 8.3 of the CLEC Handbook, Volume III.

2.0 Methodology

This section summarizes the test methodology.

2.1 Business Process Description

The Network Service Assurance Center provides "Tier II" surveillance of Bell Atlantic network elements. Tier II surveillance covers the entire Bell Atlantic network.[106] Tier I surveillance covers a particular geographic sphere of influence. For the Massachusetts area, this Tier I coverage is provided by the Taunton and Lowell Network Operations Centers.

The Network Service Assurance Center and Network Operations Center monitor and maintain the Bell Atlantic network, focusing on network integrity, reliability, and availability, and quality of the network. Bell Atlantic monitors outages that are the result of abnormal events that either effect or have the potential to effect the service capability of the network. Bell Atlantic defines abnormal events as unusual events, conditions or situations that affect, or might be expected to affect, telephone company personnel, telephone service, equipment or other property (e.g., excessive/concentrated traffic, natural disaster, accidents, etc.).

[105] CLEC Handbook Series, Volume III, Section 8.2.

[106] "Entire network," subject to this evaluation, equates to the Bell Atlantic North network covered by the Network Service Assurance Centers in Framingham, Massachusetts and New York City. Other Network Service Assurance Center[s] cover Bell Atlantic South territory.

The scope of Bell Atlantic's network surveillance covers all elements of the Bell Atlantic network. Surveillance processes and procedures subject to evaluation here cover the following network elements:

- Interoffice Facilities (IOF) – A high capacity digital transmission path that is dedicated for the use of the ordering CLEC for the transport of local, toll, and/or access traffic between central offices. The CLEC can purchase IOFs in DS-1 through DS-3 transport capacities.
- IOF Dedicated Trunk Port – This service is a termination on a Bell Atlantic switch (i.e., tandem or end office) that is dedicated to the wholesale customer for transport of local, toll and/or access traffic between the Bell Atlantic unbundled switch and the collocation (e.g., 900 service or directory assistance). The trunk port includes the associated signaling and transport options.
- Advanced Intelligent Network (AIN) – This is defined as a network architecture that includes three basic call processing elements: Service Control Points (SCP), Service Switching Points (SSP), and Signal Transfer Points (STP). An AIN SCP is a database that executes service application logic in response to queries sent to it by an SSP equipped with AIN functionality. SSPs are digital switches that may query an SCP for customer specific instructions on how to process the call (routing, blocking, etc.). STPs are packet switches that shuttle messages between an SSP and SCP or between SSP and SSP. All three communicate via out of band signaling using Signaling System 7 protocol.
- Signal System 7 (SS7) – Is a means by which network elements exchange information over an out-of-band channel called an SS7 link. There are two distinct protocols used. The first is Integrated Services Digital Network User Part (ISUP). ISUP messaging allows an SSP to communicate with another SSP through an STP. Examples of information exchange include trunk reservation, trunk setup, and call tear down requests. The second SS7 protocol is Transaction Capabilities Application Part (TCAP). SSPs may need additional information on how to route or treat a specific call request. This data may be found in an SCP. TCAP messaging allows an SSP to communicate with an SCP (or an SCP with another SCP) through an STP. Examples of information exchange include Local Number Portability data such as Location Routing Numbers and Line Information Database addresses.

Bell Atlantic monitors and analyzes the network and outages through the use of the systems listed below:

- Network Traffic Manager (NTM) - NTM gives 30 seconds to 5-minute data which provides the NSAC with traffic data on trunk groups, switch volumes, and congestion in the network. This system allows the re-routing of traffic, the insertion of call gaps, or other types of controls that are utilized in the network.

- Panther/Network Traffic Patterns (NTP) – This shows call irregularity messages directly from the switch. This provides information on mass calling events, network congestion, or trunk group problems. There are no network controls administered through this system. Panther provides additional/more-detailed data on trunk groups.
- Signaling Traffic Management (STM) – This provides the NSAC with any problems concerning SS7 links. Information is provided in real time.
- Network Monitoring and Analysis (NMA) – This provides the NSAC with transport trouble information. If NMA generates an alarm on a transport facility, selecting the alarm on the GUI will provide additional detail as to the exact type, level of trouble, and identification of the effected transport facility.
- Telecommunications Network Manager (TNM) – This tool provides awareness screens to give information on switch and facility alarms. These alarms are color coded according to severity. Additionally, this is the only alarm that will give an audible signal (SS7 problem isolation). Environmental alarms are viewed through TNM.
- Network Operations Analyzer and Assistant (NOAA) – This tool is fed information from NTM. If this tool is placed in "automatic mode," it provides the ability to automatically intervene and perform re-routes. Additionally, it has the ability to automatically insert call gaps. However, it is never allowed to perform this function automatically, as call gaps should not be inserted automatically into the network.

Figure 7.1 depicts the relationships that the Network Service Assurance Center has with other organizations in the Bell Atlantic organization. The single or bi-directional arrows identify who is responsible for initiating contact.

Figure 7-1: NSAC Relationships

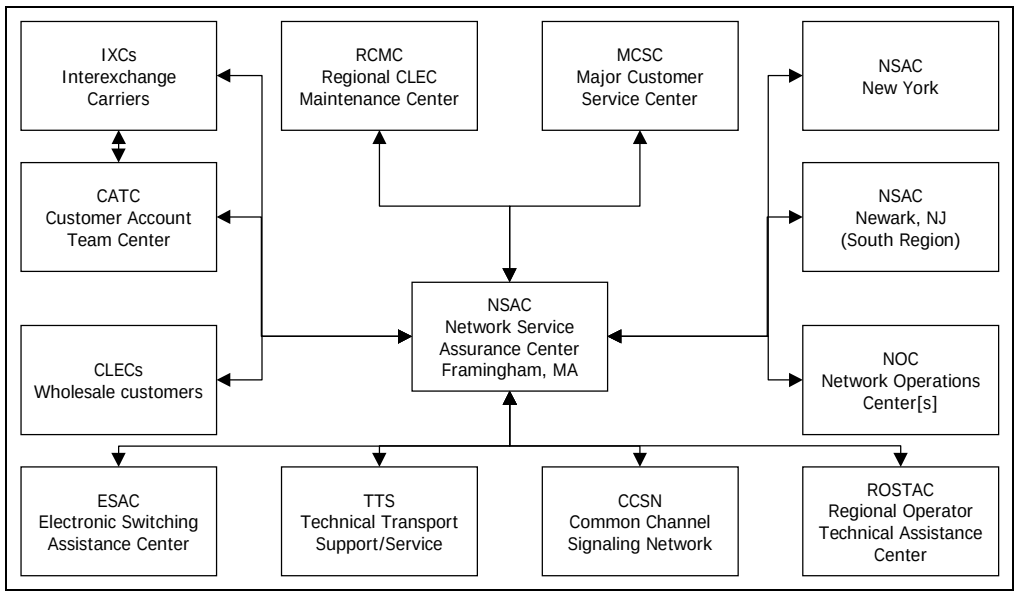
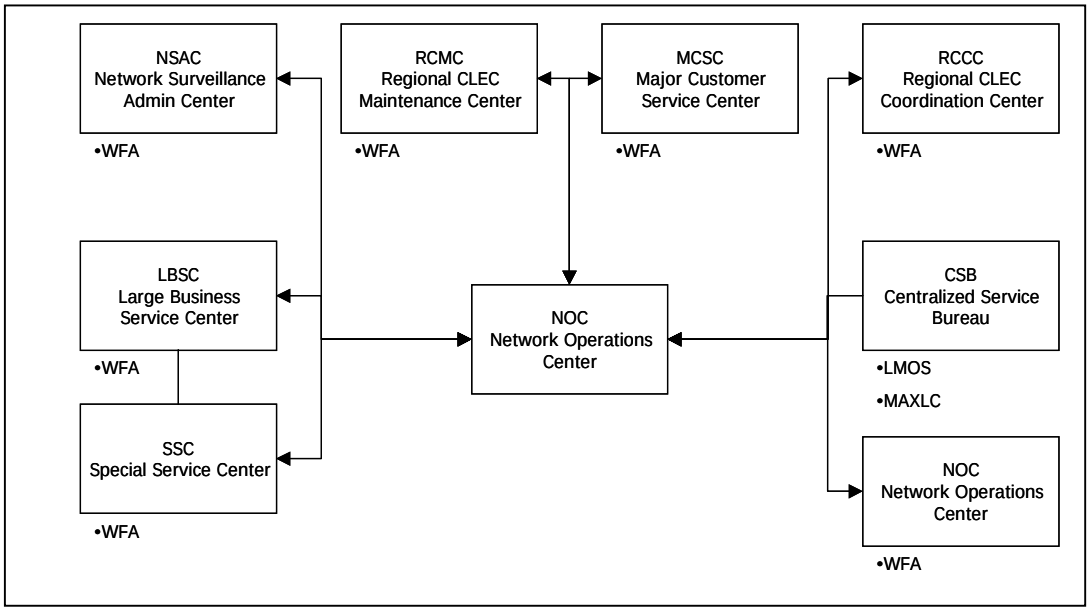


Figure 7.2 depicts the relationships that the Network Operations Center has with other organizations in the Bell Atlantic organization. The single or bi-directional arrows identify who is responsible for initiating contact. Additionally, business systems are illustrated below the organization.

Figure 7-2: NOC Relationships



2.2 Scenarios

Scenarios were not applicable to this test.

2.3 Test Targets & Measures

The test targets are the Network Surveillance Support functions. Processes, sub-processes, evaluation measures, and associated test cross-reference numbers are summarized in the following table. The last column, "Test Cross-Reference," indicates where the particular measures are addressed in Section 3.1 "Results & Analysis."

The test targets and measures utilized are summarized below.

Table 7-1: Test Target Cross-Reference

Process	Sub-Process	Evaluation Measure	Test Cross-Reference
Network Surveillance	IOF Surveillance	Existence, Reliability	MR-7-1, MR-7-2
Network Surveillance	AIN Interconnect Surveillance	Existence, Reliability	MR-7-3, MR-7-4
Network Surveillance	SS7 Interconnect Surveillance	Existence, Reliability	MR-7-5, MR-7-6
Outage Notification	Process Documentation	Accuracy, Completeness	MR-7-7, MR-7-8, MR-7-9
Outage Notification	Notification Procedures	Timeliness, Accuracy, Completeness	MR-7-7, MR-7-8, MR-7-9

2.4 Data Sources

The data collected for the test are summarized in the table below.

Table 7-2: Data Sources for Network Surveillance Support Evaluation

Document	File Name	Location in Work Papers	Source
CLEC Handbook, Volume III, Section 8 "Trouble Administration"	Hard Copy	MR-7-A-1	Bell Atlantic
Abnormal Event Procedures	Hard Copy	MR-7-A-2	Bell Atlantic
Abnormal Event Guidelines	Hard Copy	MR-7-A-3	Bell Atlantic
Major Service Interruption definitions	Hard Copy	MR-7-A-4	Bell Atlantic
FCC Outage Reporting Guidelines	Hard Copy	MR-7-A-5	Bell Atlantic

Document	File Name	Location in Work Papers	Source
Emergency Operating Procedures	Hard Copy	MR-7-A-6	Bell Atlantic
Reportable Abnormal Conditions	Hard Copy	MR-7-A-7	Bell Atlantic
Expanded Extended Loop Job Aid for Maintenance (pg.4)	Hard Copy	MR-7-A-8	Bell Atlantic
Sonet Ring Escalation Procedure	Hard Copy	MR-7-A-9	Bell Atlantic
Power Alarm Dispatch and Escalation Procedure	Hard Copy	MR-7-A-10	Bell Atlantic
Power Alarm Notification List	Hard Copy	MR-7-A-11	Bell Atlantic
Escalation Procedure for T1, T2 and T3	Hard Copy	MR-7-A-12	Bell Atlantic
DCS Surveillance Daily Report	Hard Copy	MR-7-A-13	Bell Atlantic
Provisioning Alarm / Ticket Procedures	Hard Copy	MR-7-A-14	Bell Atlantic
Network Operations Failure Procedure	Hard Copy	MR-7-A-15	Bell Atlantic
NMA Worklist Rules and Descriptions	Hard Copy	MR-7-A-16	Bell Atlantic
WFA/DI Jeopardy Codes	Hard Copy	MR-7-A-17	Bell Atlantic
Complex Services / NOC Interface Agreement	Hard Copy	MR-7-A-18	Bell Atlantic
Bell Atlantic Regional Operations Safe Time Practice	Hard Copy	MR-7-A-19	Bell Atlantic
NY NSAC and NOC Interview Report	Hard Copy	MR-7-A-20	KPMG Consulting

Document	File Name	Location in Work Papers	Source
Taunton, Massachusetts NOC Interview Report	Hard Copy	MR-7-A-21	KPMG Consulting
Framingham, Massachusetts NSAC Interview Report	Hard Copy	MR-7-A-22	KPMG Consulting

2.4.1 Data Generation/Volumes

This test did not rely on data generation or volume testing.

2.5 Evaluation Methods

The Maintenance and Repair Network Surveillance Support Evaluation (M&R7) was conducted using process interviews and reviews of related Bell Atlantic documentation requested by the test manager.

The following provides additional detail on the procedures used to evaluate Maintenance and Repair Work Center Support:

- Process Interviews – Interviews and observations were conducted at the Framingham, Massachusetts Network Service Assurance Center (NSAC) and the Taunton, Massachusetts Network Operations Center.
- Documentation Review – A documentation review was conducted of all documents provided by Bell Atlantic for the Maintenance and Repair Network Surveillance Support Evaluation (See "Data Sources for Network Surveillance Support Evaluation" table above).

2.6 Analysis Methods

The Network Surveillance Support Evaluation included a checklist of evaluation criteria developed by the test manager during the initial phase of the Bell Atlantic-Massachusetts OSS Evaluation. These evaluation criteria, detailed in the *Master Test Plan*, provided the framework of norms, standards, and guidelines for the Network Surveillance Support Evaluation.

The data collected were analyzed employing the evaluation criteria referenced above.

3.0 Results Summary

This section identifies the evaluation criteria and test results.

3.1 Results & Analysis

The results of this test are presented in the table below.

Table 7-3: M&R7 Evaluation Criteria and Results

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-7-1	Inter Office Facility (IOF) surveillance exists and is functional.	Satisfied	Interoffice Facilities such as trunk groups and transport are monitored through the use of the Network Traffic Management (NTM), Network Monitoring & Analysis (NMA), Telecommunications Network Management (TNM), and Network Operations Analysis and Assistance (NOAA) systems. NTM will indicate problems to the Network Service Assurance Center (NSAC). The NOAA system is fed from NTM and would be utilized to institute call gaps if required.[107] TNM provides the NSAC with visible, color coded, alarms regarding the jeopardy of IOFs. Similarly, NMA provides visible notification of transport status. When jeopardy thresholds are reached, NMA will automatically generate a ticket into the Work Force Administration (WFA) system.
MR-7-2	IOF events are logged, categorized, and tracked.	Satisfied	Abnormal events effecting IOFs are logged, categorized, and tracked in the abnormal events database. Additionally, when tickets for IOF events are built into the WFA system, either automatically by NMA or manually by Bell Atlantic personnel, they are categorized and tracked according to the level of severity (service level affecting), and tracked as a trouble ticket.

[107] Requirements and conditions for the institution of call gaps are explained in the CLEC Handbook, Volume III, Section 8.3.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-7-3	Advanced Intelligent Network (AIN) surveillance exists and is functional.	Satisfied	Surveillance of advanced intelligent network connectivity is provided by the Network Monitoring & Analysis (NMA) and the Telecommunications Network Manager (TNM) systems. NMA provides visible notification of transport status. When jeopardy thresholds are reached, NMA will automatically generate a ticket into the Work Force Administration (WFA) system. TNM provides the NSAC with visible, color coded, alarms regarding the jeopardy of advanced intelligent network connectivity.
MR-7-4	AIN events are logged, categorized, and tracked.	Satisfied	Abnormal events effecting advanced intelligent network connectivity are logged, categorized, and tracked in the abnormal events database. Additionally, when tickets for AIN events are built into the WFA system, either automatically by NMA or manually by Bell Atlantic personnel, they are categorized and tracked according to the level of severity (service level affecting) and tracked as a trouble ticket.
MR-7-5	Signaling System Seven (SS7) surveillance exists and is functional.	Satisfied	The Signaling Traffic Management (STM) system displays SS7 traffic information in real time to the Network Service Assurance Center. STM information is constantly updated and presented to Bell Atlantic personnel in a heads up display. The Telecommunications Network Management (TNM) system generates awareness screens to alert Bell Atlantic personnel to SS7 problems. TNM SS7 problem isolation produces an audible alarm which must be reacted to in order to silence.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-7-6	Signaling System Seven (SS7) events are logged, categorized, and tracked.	Satisfied	SS7 alarms generated by the STM and TNM systems are reviewed and confirmed by NSAC personnel. If trouble is authenticated, a trouble ticket is generated and the "abnormal event" procedures are followed. Abnormal events effecting SS7 links are logged, categorized, and tracked in the abnormal events database. Additionally, when tickets for SS7 events are built into the WFA system, they are categorized and tracked according to the level of severity (service level affecting) and tracked as a trouble ticket.
MR-7-7	Bell Atlantic has a documented policy and procedure for notification during an outage.	Satisfied	The CLEC Handbook, Volume III, Section 8.3.7, describes network outages that effect service as "abnormal events." Possible outages listed include the following: ♦ Switch failures ♦ Interoffice facility failures ♦ Major cable failures Bell Atlantic stipulates that it has the ability to notify CLECs of critical network failures via email. The process for establishing notification is defined as follows: ♦ "Upon request by a CLEC through the Bell Atlantic Account Manager assigned to that CLEC, Bell Atlantic will notify the CLEC of certain events in the Bell Atlantic network that may be service affecting… Notification of reportable events is sent to CLECs simultaneously with the internal Bell Atlantic event notification. The usual Bell Atlantic practice is for the notification process to begin within 30 minutes after the Bell Atlantic work center has determined that a reportable event has occurred."

Test Cross-Reference	Evaluation Criteria	Result	Comments
			A general description of reportable events is given and includes the following: ♦ 911: Any disruption of 911 service regardless of duration ♦ IOF/Transport: Failure of one or more T3s for 30 minutes or more. Failure of one or more T3s that support [critical government] related services for 15 minutes or more ♦ Switch: Total switch failure for two minutes or more, or partial switch failure involving 5000 or more lines for 30 minutes or more ♦ Signaling: SS7 node isolation of five minutes or more. Signal Transfer Point or Signal Control Point down for two hours or more ♦ Power: Any power failure resulting in a major service interruption ♦ Fire: Fires resulting in a major service interruption or having the potential to cause a major service interruption ♦ Local Loop/Subscriber Cable Failure: A subscriber cable failure resulting in 25 or more initial customer reports In addition, Bell Atlantic maintains the "Reportable Abnormal Conditions" Job Aid which specifically outlines reporting responsibilities, reportable conditions, and when to notify Bell Atlantic organizations.[108] The "Network Operations Network Failure Procedure" outlines specific notification requirements for the Network Operations Center in their Tier I surveillance role.

[108] Following the procedure outlined in the CLEC Handbook, Volume III, Section 8.3.7, the notification of "Bell Atlantic organizations" coincides with the CLEC requested notification process.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-7-8	Intervals exist for notifying effected CLECs of outages.	Satisfied	The CLEC Handbook, Volume III, Section 8.3.7, stipulates that the usual Bell Atlantic practice is for the notification process to begin within 30 minutes after the Bell Atlantic work center has determined that a reportabe event has occurred. Specific timing and severity triggers for notification of abnormal events/outages are contained in the "Reportable Abnormal Conditions" Job Aid.
MR-7-9	Outage notification procedures are timely, accurate, and operationally complete.	Satisfied	Abnormal event/outage notification time triggers are provided to the CLECs in the CLEC Handbook, Volume III, Section 8.3.7. Abnormal event/outage notification procedures, as defined in the "Reportable Abnormal Conditions" Job Aid, provide specific timeline information, as well as who and when to contact other Bell Atlantic organizations. A sample of these follow: ♦ Cable Failures ♦ Carrier System Failures ♦ Electronic and Digital Switching Systems ♦ SS7 Degradation ♦ T3 or DS3 ♦ Isolation ♦ Network Congestion ♦ Enhanced Services ♦ Operations Support Systems Abnormal event/outage notification follow Federal Communications Guidelines as set forth in the Code of Federal Regulations, Title 47, Volume 3, Part 63, Section 63.100 "Notification of Service Outage."

H. Test Results: M&R Coordination Process Evaluation (M&R8)

1.0 Description

The Maintenance and Repair Coordination Process Test is an evaluation of the processes, procedures, and other operational elements associated with M&R coordinated/joint meet (vendor meet) activities between Bell Atlantic-Massachusetts (BA-MA) and the wholesale customer operation organizations.

2.0 Methodology

This section summarizes the test methodology.

2.1 Business Process Description

Bell Atlantic consolidated all CLEC maintenance centers for both its northern and southern footprint into a single point of contact in June 1999. This single point of contact, the Regional CLEC Maintenance Center (RCMC), is a multi-location facility connected by a single automated call distribution system (ACD). Bell Atlantic has also transferred maintenance and repair responsibilities from the Regional CLEC Coordination Centers (RCCC) and the Telecommunications Industry Services Operations Centers (TISOCs) to the RCMC. This virtual center is the single point of contact for Bell Atlantic-North and -South wholesale customer coordinated/joint meet requests.

A coordinated/joint meet generally occurs when several attempts are made to resolve an unbundled loop trouble with no success. BA-MA and the CLEC schedule a coordinated/joint meet at the agreed upon location and work together in isolating and resolving the trouble. BA-MA, CLECs, and possibly third-party vendors meet to resolve chronic troubles, conduct coordinated analysis on switch circuits, isolate hard-to-find faults, or verify an existing trouble and corresponding diagnosis. The location of a coordinated meet can vary but normally takes place at a mutually agreed upon trouble source spot or at the demarcation point. BA-MA classifies the meets as either Dispatch Outs (DO) or Dispatch Ins (DI). Dispatch Outs are designated in the Work Force Administration System (WFA) as DO to notify the BA-MA dispatch organization that the coordinated meet will take place outside the BA-MA central office. Trouble tickets that require Dispatch Ins are designated in WFA as DI to notify the dispatch organization that the coordinated meet will take place inside the BA-MA central office.

2.2 Scenarios

Scenarios were not applicable to this test.

2.3 Test Targets & Measures

The test targets were coordinated/joint meet procedures and coordinated testing efforts between Bell Atlantic-Massachusetts and wholesale customer operation organizations. Processes, sub-processes, evaluation measures, and associated test cross-reference numbers are summarized in the following table. The last column, "Test Cross-Reference," indicates where the particular measures are addressed in Section 3.1 "Results & Analysis."

Table 8-1: Test Target Cross-Reference

Process	Sub-Process	Evaluation Measure	Test Cross-Reference
Coordinated/Joint Meet Procedures	Process Documentation	Clarity, Accuracy, Completeness	MR-8-1, MR-8-2, MR-8-3, MR-8-7, MR-8-8, MR-8-9
Coordinated/Joint Meet Procedures	Notification Procedures	Timeliness, Accuracy	MR-8-1, MR-8-7, MR-8-9
Coordinated/Joint Meet Testing	Process Documentation	Clarity, Accuracy, Completeness	MR-8-6, MR-8-10
Coordinated/Joint Meet Procedures	Notification Procedures	Timeliness, Accuracy	MR-8-4, MR-8-5

2.4 Data Sources

The data collected for the test are summarized in the table below.

Table 8-2: Data Sources for M&R Coordination Process Evaluation

Document	File Name	Location in Work Papers	Source
CLEC Handbook	CD-ROM	MR-5-B	Bell Atlantic
Resale Handbook	Hard Copy	MR-5-C	Bell Atlantic

Document	File Name	Location in Work Papers	Source
Vendor Meet Process for UNE Loops – Maintenance RCMC North and South	Hard Copy	MR-8-A-1	Bell Atlantic
TXNU and TXSU Trouble Ticket Entry and Handoff in WFA/C RCMC (Attachment D)	Hard Copy	MR-8-A-2	Bell Atlantic
SAFETIME Network Operations – New England	Hard Copy	MR-8-A-3	Bell Atlantic
Interviews with Regional CLEC Maintenance Center Personnel	M&R8_Intv_012700.doc	MR-8-A-4	KPMG Consulting
Interviews with Network Operations Center personnel	NOC_030700.doc	MR-8-A-5	KPMG Consulting
Interviews with Wholesale Installation and Maintenance personnel	WIM_032300.doc	MR-8-A-6	KPMG Consulting

2.4.1 Data Generation/Volumes

This test did not rely on data generation or volume testing.

2.5 Evaluation Methods

Bell Atlantic Coordinated/Joint Meet procedures were reviewed and rated according to targets established by the test manager.

The following provides additional detail on the procedures used to evaluate the Maintenance and Repair Coordination Process Evaluation:

1. Process Interviews – Interviews were conducted with the Regional CLEC Maintenance Center, Network Operation Center, Wholesale Installation and Maintenance organization, and wholesale customers.

2. Documentation Review – A documentation review was conducted of all documents provided by Bell Atlantic for the Coordination Process Evaluation.

2.6 Analysis Methods

The M&R Coordination Process Evaluation included a checklist of evaluation criteria developed by the test manager during the initial phase of the Bell Atlantic-Massachusetts OSS Evaluation. These evaluation criteria, detailed in the *Master Test Plan*, provided the framework of norms, standards, and guidelines for the M&R Coordination Process Evaluation.

The data collected were analyzed employing the evaluation criteria referenced above.

3.0 Results Summary

This section identifies the evaluation criteria and test results.

3.1 Results & Analysis

The results of this test are presented in the table below.

Table 8-3: M&R8 Evaluation Criteria and Results

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-8-1	Coordinated meet policies and procedures are defined, documented, and distributed.	Satisfied	Coordinated/joint meet processes and procedures are defined and documented in the "Vendor Meet Process for the RCMC" and "TXNU and TXSU Trouble Ticket Entry and Handoff in WFA/C (attachment D)" Job Aids. These Job Aids are distributed in training and are made available to all through the corporate intranet. Procedural documentation covers the following topic areas associated with vendor meets: ♦ Background ♦ Rationale ♦ RCMC Responsibility ♦ Report Type ♦ Bell Atlantic Trouble ♦ Process ♦ Screen Prints

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-8-2	The scope and objectives of coordinated meets are defined and documented.	Satisfied	Vendor meet documentation ("Vendor Meet Process for the RCMC" job aid) clearly defines requirements for establishing need of vendor meets, circuit types most often associated with vendor meets, specific procedures for possible vendor meet scenarios, requirements for reporting and tracking, participating organizations, and procedures for dealing with errors and exceptions encountered. Reasons for and expected outcomes are defined and documented.
MR-8-3	Responsibilities for scheduling coordinated meets between BA-MA and CLECs are defined and documented.	Satisfied	Requirements and conditions for scheduling vendor meets are defined and documented in the Vendor Meet Job Aids. Specific requirements are given for both Bell Atlantic and the wholesale customer. For each step in the establishment of a vendor meet, notes are provided to direct Bell Atlantic personnel as to who and when to contact depending on the reason for the meet.
MR-8-4	M&R personnel are of a sufficient technical expertise to handle joint meets with CLECs and/or third party vendors.	Satisfied	Work center and dispatch organization personnel are trained in how to schedule a vendor meet. This training includes both the general process requirements as defined in the job aid and how to enter the request properly into the Work Force Administration system. Technicians are given no specific training on the vendor meet process as vendor meets are an abnormal but expected activity. Technicians are given an initial two weeks training when they first join. Additional training is provided through on the job training. The Wholesale Installation and Maintenance organization of technicians is composed of a mix of experienced technicians from the retail organization in addition to new hires.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-8-5	M&R personnel are familiar with and have received all relevant equipment training relating to BA-MA standards.	Satisfied	Work center and dispatch organization personnel are trained in how to schedule a vendor meet. This training includes both the general process requirements as defined in the job aid and how to enter the request and corresponding narrative properly into the Loop Maintenance Operations and Work Force Administration systems. Technicians receive no specific training as to equipment which is of possible subject for a vendor meet. The equipment that is used during, or the subject of vendor meets is identical to equipment encountered during normal maintenance and repair operations. Technicians are given an initial two weeks training when they first join Bell Atlantic. Additional training is provided through on the job training. The Wholesale Installation and Maintenance organization of technicians is composed of a mix of experienced technicians from the retail organization in addition to new hires.
MR-8-6	All equipment training that M&R personnel receive is approved by BA-MA.	Satisfied	Equipment training is provided to the dispatching organizations through their new hire training. These training sessions are conducted through both the formal Bell Atlantic training organization in addition to training that is provided at the dispatch center locations. Training for outside technicians is provided by the formal Bell Atlantic training organization responsible for outside technician training. Additional training, above and beyond on-the-job training, averages in excess of 10 days per year for the Wholesale and Installation organization.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-8-7	M&R technicians receive accurate address and meet time to ensure coordinated meet appointments are met.	Satisfied	As specified in vendor meet job aid documentation, in order to request a coordinated/joint meet, the work center personnel must do the following: ♦ Record the circuit number in question ♦ Verify all dispatches on the circuit ♦ Establish location of the vendor meet (In or Out) ♦ Record the date and times that are available to the customer ♦ Record specific location information (e.g., collocation space) Additional instruction is provided in the job aid which directs the Bell Atlantic personnel to verify the availability of resources as well as direction/example for a narrative to be placed in the ticket.
MR-8-8	Coordinated meets are conducted when important M&R issues are defined as troubles that, if not rectified quickly, can seriously hinder a CLEC's ability to provide service to their end users.	Satisfied	The "TXNU and TXSU Trouble Ticket Entry and Handoff" job aid defines specific trouble situations in which a vendor meet is required. Vendor meet requirements and responsibilities for Bell Atlantic maintenance control organizations (MCO) vary according to the outage impact. For example, if the vendor meet involves a T3, the Network Surveillance Administration Center would become the MCO. Additionally, if the resolution of the vendor meet trouble involves a customer impact of 100 or more lines, "Safe Time" rules will be in effect. Safe Time rules, in general, set guidelines which specify that customer impacting installations and maintenance be performed during hours of the lowest utilization.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-8-9	Third party vendors, when their participation is required, are informed of the location, time and nature of the coordinated meet.	Satisfied	Third-party participation is not required from the Bell Atlantic side. Third-party notification, if required for wholesale customer equipment, is performed by the CLEC. Contingency procedures dealing with third party vendor participation are detailed in the vendor meet job aid documentation.
MR-8-10	BA-MA's joint meet process includes identifying and resolving troubles that initially are not clearly associated with BA-MA or CLEC equipment.	Satisfied	The "TXNU and TXSU Trouble Ticket Entry and Handoff" job aid documents a specific process to isolate and resolve troubles that are not clearly associated with Bell Atlantic or CLEC equipment/facilities. This process establishes that if a CLEC reports the same UNE-Loop trouble at least twice, and the troubles have been both dispatched out and dispatched in with Bell Atlantic finding no trouble, Bell Atlantic will provide the option for scheduling a vendor meet at the earliest opportunity.

I. Test Results: Work Center Capacity Management Evaluation (M&R9)

1.0 Description

The M&R Work Center Capacity Management Evaluation is a detailed review of the safeguards and procedures in place to plan for and manage projected personnel and facilities growth in the RCMC (Regional CLEC Maintenance Center) work centers associated with the wholesale trouble management processes.

For M&R9, the test manager reviewed and analyzed the Bell Atlantic-provided documentation used to assist in the forcing and scheduling of attendants based on call demand volume. The test also evaluated Bell Atlantic's ability to augment the center's environment to meet new demand and to handle office interruption without stemming the flow of calls handled. This evaluation assessed the availability, and completeness of Bell Atlantic's maintenance and repair capacity management documentation using a variety of operational analysis techniques. This test utilized site observations/interviews, evaluation of the RCMC Attendant Student Training guide, ACD (Automatic Call Distributor) Volume Log report, RCMC Contingency Plan, Employee Monthly Report Card, Ratio of Workers per Tour report and the RCMC Quality Assurance Plan.

2.0 Methodology

This section summarizes the test methodology.

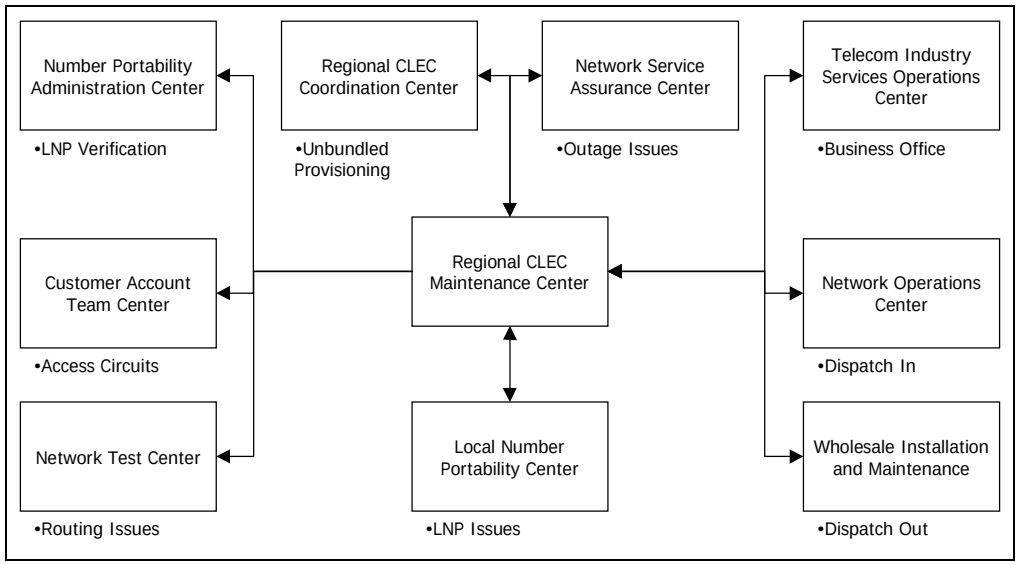
2.1 Business Process Description

Bell Atlantic consolidated all Regional CLEC Maintenance Centers (RCMC) for both its northern and southern footprint into a single location in Bridgewater, New Jersey in June of 1999. Additional capacity is provided through a virtual center located 17 miles away (RTE 18). A virtual center located in Richmond, Virginia came online in February 2000 to provide a redundant office for disaster recovery protection.

Bell Atlantic has also transferred maintenance and repair responsibilities from the Regional CLEC Coordination Centers (RCCC) and the Telecommunications Industry Services Operations Centers (TISOCs) to the RCMC. This center is the single point of contact for Bell Atlantic-North and -South CLEC maintenance repair issues.

Figure 9.1 depicts the relationships that the RCMC has with other organizations in the Bell Atlantic organization. The single or bi-directional arrows identify who is responsible for initiating contact. Additionally, business reasons are illustrated below the organization.

Figure 9-1: RCMC Interactions



Service attendant calls are switched through a truncated Automatic Call Distributor. Bell Atlantic RCMC Managers analyze the data collected from the ACD to monitor and track utilization statistics. An "In-charge" desk (staffed by an Assistant Manager) serves as the center's central monitoring position where real time utilization statistics are presented via a PC based system called the "Pinnacle Looking Glass." Based on current call load as presented by the Pinnacle system, the "In-charge" Manager is able to redistribute the work force. The "In-charge" Manager can redistribute resources, by having service attendants log into the service station to handle a particular call type (dictated by demand at that point in time by call type), to staff for overtime, and to staff a service terminal to handle live calls.

2.2 Scenarios

Scenarios were not applicable to this test.

2.3 Test Targets & Measures

The test target was Work Center Capacity Management procedures and associated documentation available to RCMC staff used to plan, force and monitor the center's ability to manage capacity changes as they relate to increases in call volume. Processes, sub-processes, evaluation measures, and associated test cross-reference numbers are summarized in the following table. The last column, "Test Cross-Reference," indicates where the particular measures are addressed in Section 3.1 "Results & Analysis."

Table 9-1: Test Target Cross-Reference

Process	Sub-Process	Evaluation Measure	Test Cross-Reference
Data collection and reporting of business volumes, resource utilization, and performance monitoring	ACD Pinnacle Looking Glass report	Existence, Timeliness, Scalability, Accuracy	MR-9-1, MR-9-8
Data verification and analysis of business volumes, resource utilization, and performance monitoring	Ratio of Workers per Tour report ACD Pinnacle Looking Glass report Quality Assurance Plan Monthly Report Card RCMC Student Guide Internal web page for M&P's and new services	Accuracy, Scalability, Existence	MR-9-2, MR-9-4, MR-9-5, MR-9-7, MR-9-8, MR-9-9
Work Center Capacity planning	Contingency Plan RCO-99-1053 Internal web page Estimate case implementation	Existence	MR-9-3, MR-9-6, MR-9-10

2.4 Data Sources

The data collected for the test are summarized in the table below.

Table 9-2: Data Sources for Work Center Capacity Management Evaluation

Document	File Name	Location in Work Papers	Source
RCMC Student Training Guide	Hard Copy	MR-9-A-1	Bell Atlantic
ACD Looking Glass Volume Report	Hard Copy	MR-9-A-2	Bell Atlantic
Contingency Plan	Hard Copy	MR-9-A-3	Bell Atlantic

Document	File Name	Location in Work Papers	Source
Employee Monthly Report Card	Hard Copy	MR-9-A-4	Bell Atlantic
Ratio of Workers per Tour Report	Hard Copy	MR-9-A-5	Bell Atlantic
Quality Assurance Plan	Hard Copy	MR-9-A-6	Bell Atlantic
RCMC Force Model	Hard Copy	MR-9-A-7	Bell Atlantic
RCMC Operations Plan	Hard Copy	MR-9-A-8	Bell Atlantic
RCMC Interview Report	M&R9_Intv_012700.doc	MR-9-A-9	KPMG Consulting

2.4.1 Data Generation/Volumes

This test did not rely on data generation or volume testing.

2.5 Evaluation Methods

Interviews were conducted with RCMC personnel responsible for managing the capacity of this center. These interviews were also supplemented with an analysis of the RCMC's capacity management procedures as well as evidence of related activities such as periodic work center capacity management reviews, hiring campaigns, training programs, and work center facilities planning activities.

In order to assess these focal points, evaluation criteria were first established by the test manager. These evaluation criteria cover the test targets set forth in the *Master Test Plan*.

The test manager collected electronic and hard copies of documents that the RCMC uses to support capacity management efforts. Documentation was reviewed by the test manager and evaluated against the evaluation criteria (Table 9-3).

Interviews with Bell Atlantic subject matter experts were conducted in order to provide additional insight for this test.

Information/data obtained through interviews and documentation requests was reviewed against the established evaluation criteria. A determination was made as to whether each criterion was satisfied or not satisfied and these results are documented in the Results Summary (Section III).

2.6 Analysis Methods

The Work Center Capacity Management Evaluation included a checklist of evaluation criteria developed by the test manager during the initial phase of the Bell Atlantic-Massachusetts OSS Evaluation. These evaluation criteria, detailed in the *Master Test Plan*, provide the framework of norms, standards, and guidelines for the Work Center Capacity Management Evaluation.

The data collected were analyzed employing the evaluation criteria referenced above.

3.0 Results Summary

This section identifies the evaluation criteria and test results.

3.1 Results & Analysis

The results of this test are presented in the table below.

Table 9-3: M&R9 Evaluation Criteria and Results

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-9-1	There is an established process for capturing business and transaction volumes.	Satisfied	The Pinnacle ACD Looking Glass produces a number of reports that identify call volumes by day by half-hour segment and calculates speed of answer efficiencies. Calls are logged by speed of answer and compared against a stated 30-second speed of answer objective. This report can be generated by inputting a number of variables such as type of call or geographic turf area that the report originated from. This data is accumulated daily and used to complete both forecasting and individual performance activities.
MR-9-2	There is an established process for forecasting business volumes and transactions.	Satisfied	The Force Manager uses data collected from the ACD to forecast business volumes and transactions in order to identify how many tours per shift are required. An employee schedule is produced and posted three weeks in advance. This preliminary schedule is modified as the needs of the business change.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-9-3	Project plans (contingency) exist for seat augmentation should call volumes dictate the need.	Satisfied	Bell Atlantic's Bridgewater RCMC location seating capacity is 178 positions. A new 300-seat facility came online in Richmond, Virginia in February 2000.
MR-9-4	Data infrastructure components are monitored for utilization and availability.	Satisfied	Bell Atlantic monitors both WAN (Wide Area Network) and LAN (Local Area Network) components against defined thresholds. Once these thresholds are met/exceeded additional equipment is installed to handle the increased data load. Both WAN and LAN components are also monitored by SNMP devices (simple network management protocol) to identify lost connectivity or other irregularities.
MR-9-5	Force scheduling is adjusted in accordance with service quality objectives.	Satisfied	The "In-charge Manager" makes force adjustments by analyzing the ACD Pinnacle Looking Glass report. These adjustments are based on half-hour increments. The system is capable of identifying call type and volume as it relates to attendant speed of answer. This allows staffing changes to be made where an attendant can be logged out of one call type queue and into another. All of these activities are conducted so that Bell Atlantic can consistently meet mandated service quality objectives.
MR-9-6	A process for capacity growth is defined and utilized.	Satisfied	Regulated service levels mandate that calls have to be answered as follows: 80% of the calls have to be answered in 20 seconds. The RCMC managerial team in concert with the NOC support staff routinely monitor utilization and thresholds of call processing interfaces to ensure that sufficient seating capacity exists to handle fluctuations in work flow.

Test Cross-Reference	Evaluation Criteria	Result	Comments
			Bell Atlantic uses a force model to estimate capacity requirements. This model uses the following assumptions: an RCMC attendant will have an occupancy rate of 75% with 80% productivity, and an average work time of 720 seconds. This model also takes into account that the office will maintain a service level of 90% of the calls being handled in 20 seconds. Data for this model is collected from the ACD and analyzed over a 12-month interval. The model reports actuals and forecasted figures and calculates rate metrics. Based on this analysis, the RCMC staff initiates business case development to solicit funding for business function development.
MR-9-7	The M&R work center has call handling objectives that are based on satisfying defined performance objectives.	Satisfied	Work center performance objectives are set in accordance with guidelines in the Quality Assurance Plan. Quality Assurance dictates that a minimum satisfactory indicator of 85% be met. To reach this objective, team leaders are responsible for completing a minimum of four quality reviews per attendant per month. Based on a set of criteria, the employee receives either a satisfactory or non satisfactory rating for an individual review. 85% of these reviews must be scored satisfactory.
MR-9-8	Managers periodically review individual attendant performance statistics.	Satisfied	A Monthly Report Card is completed for each attendant based on his or her month's performance as collected from the ACD Pinnacle Looking Glass. Here the attendant is tracked for average work time against average calls per hour and total availability. The employee then receives a series of efficiency ratings. Their team leader meets with them each month to review their performance and inform them of supplemental training that they can expect to receive in the coming month.

Test Cross-Reference	Evaluation Criteria	Result	Comments
MR-9-9	Initial and follow-up training exists for attendants to be educated on proper call handling procedures.	Satisfied	Each attendant receives initial training based on a format dictated by the RCMC Student Training Guide. Follow-up training is completed based on new services or M&P's introduced as well as the results of the Monthly Report Card. A weekly performance report per attendant is prepared and forwarded to the Training Supervisor who provides individual training and coaching as required.
MR-9-10	Contingency action plans exist for business functions in the event of extended office outage.	Satisfied	A Contingency Plan exists [Document No. RCO-99-1053] that details procedures for handling office interruptions. Manual procedures exist for handling ACD/800 line/Site outages as identified in the Contingency Plan. This document is available on an internal web page as well as in hard copy in the center.

A. Test Results: Billing Process Metrics Evaluation (BLG1)

1.0 Description

The Billing Process Metrics Evaluation (BLG1) was an end-to-end operational analysis of the processes and systems used to capture Bell Atlantic-Massachusetts (BA-MA) Wholesale Billing metrics. The objective of this test was to evaluate the processes related to managing, tracking, and reporting of billing metrics.

2.0 Methodology

This section summarizes the test methodology.

2.1 Business Process Description

Three Billing metrics were identified for evaluation in the BA-MA testing. The metrics are Timeliness of Daily Usage Feed (DUF), Timeliness of Carrier Bills, and Billing Accuracy. The definitions of the measurement points and the methods calculation of these three metrics are defined in the NY PSC Case 97-C-0139 November 15, 1999 Compliance Filing for New York State, Carrier-to-Carrier Guidelines Performance Standards and Reports Bell Atlantic Reports, November 1999.

The Carrier-to-Carrier Guideline definitions of the evaluation criteria for DUF Timeliness, Carrier Bill Timeliness, and Billing Accuracy are as follows:

- DUF Timeliness – The number of business days from the creation of the message to the date that the usage information is made available to the CLEC on the Daily Usage Feed (DUF).
- Carrier Bill Timeliness – The percentage of Customer Record Information System (CRIS) paper carrier bills sent to the carrier, unless the CLEC requests special treatment, within ten business days of the bill date. The bill date is the end of the billing period for recurring, non-recurring and usage charges.
- Billing Accuracy – The percentage of carrier bills adjusted due to billing errors.

Bell Atlantic Processing of the DUF, Billing Timeliness and Billing Accuracy Metrics includes the following common steps:

- Acquisition of data from the usage processing and billing systems.
- Processing of the usage and billing data to develop the results.
- Publication or distribution of the data and the final results.

2.2 Scenarios

Scenarios were not applicable to this test.

2.3 Test Targets & Measures

The test was designed to evaluate the Billing metrics process used to measure, track and report DUF Timeliness, Carrier Billing Timeliness and Billing Accuracy. Processes, sub-processes, evaluation measures, and associated test cross-reference numbers are summarized in the following tables. The last column, "Test Cross-Reference," indicates where the particular measures are addressed in Section 3.1 "Results & Analysis."

Table 1-1: DUF Timeliness Test Target Cross-Reference

Process	Sub-Process	Evaluation Measure	Test Cross-Reference
Validate Metrics Information Gathering Process	Identify control points where measurements are taken	Applicability and measurability of control points	BLG-1-1-1, BLG-1-1-3
Validate Metrics Information Gathering Process	Identify data sources for each reported metric	Applicability and completeness of data sources	BLG-1-1-1, BLG-1-1-2, BLG-1-1-4
Validate Metrics Information Gathering Process	Identify each tool used by Bell Atlantic to collect data	Applicability and reliability of tools	BLG-1-1-4, BLG-1-1-5, BLG-1-1-6, BLG-1-1-7, BLG-1-1-10, BLG-1-1-11
Evaluate Quality of Metric Reported	Evaluate calculation	Accuracy and applicability of calculations	BLG-1-1-7
Evaluate Quality of Metric Reported	Evaluate tools	Accuracy, security and controllability of data housed in tools	BLG-1-1-8, BLG-1-1-9
Evaluate Reports	Evaluate report format	Consistency of reporting results with data collected	BLG-1-1-12
Evaluate Reports	Evaluate report content	Accuracy of metrics reporting	BLG-1-1-13

Table 1-2: Carrier Bill Timeliness Test Target Cross-Reference

Process	Sub-Process	Evaluation Measure	Test Cross-Reference
Validate Metrics Information Gathering Process	Identify control points where measurements are taken	Applicability and measurability of control points	BLG-1-2-1, BLG-1-2-3
Validate Metrics Information Gathering Process	Identify data sources for each reported metric	Applicability and completeness of data sources	BLG-1-2-1, BLG-1-2-2, BLG-1-2-4

Process	Sub-Process	Evaluation Measure	Test Cross-Reference
Validate Metrics Information Gathering Process	Identify each tool used by Bell Atlantic to collect data	Applicability and reliability of tools	BLG-1-2-4, BLG-1-2-5, BLG-1-2-6, BLG-1-2-7, BLG-1-2-10, BLG-1-2-11
Evaluate Quality of Metric Reported	Evaluate calculation	Accuracy and applicability of calculations	BLG-1-2-7
Evaluate Quality of Metric Reported	Evaluate tools	Accuracy, security and controllability of data housed in tools	BLG-1-2-8, BLG-1-2-9
Evaluate Reports	Evaluate report format	Consistency of reporting results with data collected	BLG-1-2-12
Evaluate Reports	Evaluate report content	Accuracy of metrics reporting	BLG-1-2-13

Table 1-3: Billing Accuracy Test Target Cross-Reference

Process	Sub-Process	Evaluation Measure	Test Cross-Reference
Validate Metrics Information Gathering Process	Identify control points where measurements are taken	Applicability and measurability of control points	BLG-1-3-1, BLG-1-3-3
Validate Metrics Information Gathering Process	Identify data sources for each reported metric	Applicability and completeness of data sources	BLG-1-3-1, BLG-1-3-2, BLG-1-3-4
Validate Metrics Information Gathering Process	Identify each tool used by Bell Atlantic to collect data	Applicability and reliability of tools	BLG-1-3-4, BLG-1-3-5, BLG-1-3-6, BLG-1-3-7, BLG-1-3-10, BLG-1-3-11
Evaluate Quality of Metric Reported	Evaluate calculation	Accuracy and applicability of calculations	BLG-1-3-7
Evaluate Quality of Metric Reported	Evaluate tools	Accuracy, security and controllability of data housed in tools	BLG-1-3-8, BLG-1-3-9
Evaluate Reports	Evaluate report format	Consistency of reporting results with data collected	BLG-1-3-12
Evaluate Reports	Evaluate report content	Accuracy of metrics reporting	BLG-1-3-13

2.4 Data Sources

The data collected for the test are summarized in the table below.

Table 1-4: Data Sources for Billing Process Metrics Evaluation

Document	File Name	Location in Work Papers	Source
Carrier-to-Carrier Standards report (DUF & Billing Timeliness specific)	c2c0799_MAny.xls	BLG-1-A-I-1	BA-MA
Carrier-to-Carrier Standards report (DUF & Billing Timeliness specific)	c2c0899_MAny.xls	BLG-1-A-I-2	BA-MA
Carrier-to-Carrier Standards report (DUF & Billing Timeliness specific)	c2c0999_MAny.xls	BLG-1-A-I-3	BA-MA
Carrier-to-Carrier Standards report (DUF & Billing Timeliness specific)	c2c1099_MAny.xls	BLG-1-A-I-4	BA-MA
Carrier-to-Carrier Standards report (DUF & Billing Timeliness specific)	c2c1199_MAny.xls	BLG-1-A-I-5	BA-MA
Bell Atlantic Response to KPMG Consulting information clarification request dated February 10, 2000	DUF Timeliness Metric.doc	BLG-1-A-I-6	BA-MA
Change Management Document "Conceptual Initiative Definition" (CID)	Hard Copy	BLG-1-A-I-7	BA-MA
BPS form (example of change management)	DUFTimeliness BRDS3.doc	BLG-1-A-I-8	BA-MA
SES form (example of change management)	SES Example.doc	BLG-1-A-I-9	BA-MA

Document	File Name	Location in Work Papers	Source
Sample Resale and Wholesale DUF Metric Spreadsheets specific to Massachusetts or New England	NEU9912 .xls	BLG-1-A-I-10	BA-MA
Sample Resale and Wholesale DUF Metric Spreadsheets specific to Massachusetts or New England	NE9912 .xls	BLG-1-A-I-11	BA-MA
DUF Tracking Report	DUF Errors.doc	BLG-1-A-I-12	BA-MA
DUF North Job Aid	Job Aid for DUF_aka EMR_North.doc	BLG-1-A-I-13	BA-MA
Bell Atlantic Response to KPMG Consulting information clarification requests dated February 10, 2000	Carrier Billing Timeliness Metrics.doc	BLG-1-A-I-14	BA-MA
Bell Atlantic Response to KPMG Consulting information clarification requests dated February 17, 2000	Carrier Bill Timeliness Daily and Monthly Summaries.doc	BLG-1-A-I-15	BA-MA
Bell Atlantic Wholesale Bill Timeliness Methods and Procedures	BDT timeliness.doc	BLG-1-A-I-16	BA-MA
Billing Timeliness metric Daily/monthly reports	Sumtim99.xls	BLG-1-A-I-17	BA-MA
Initiative form and number	Billing Metrics Data Repository.doc	BLG-1-A-I-18	BA-MA
Initiative detail (e.g., timeliness calculation automation)	BPS Referral Tracking example.doc	BLG-1-A-I-19	BA-MA

Document	File Name	Location in Work Papers	Source
Instruction Sheet for Billing Timeliness metric calculation	Instructions for the BDT timeliness.doc	BLG-1-A-I-20	BA-MA
Metric Calculation Guidelines	CABS MA Metrics & Algorithms instructions.doc	BLG-1-A-I-21	BA-MA
Carrier-to-Carrier Standards report (Billing Accuracy specific)	c2cJAN00_Magraham.xls	BLG-1-A-I-22	BA-MA
Carrier-to-Carrier Standards report (Billing Accuracy specific)	c2cMAR00_MAgraham. xls	BLG-1-A-I-23	BA-MA
Monthly adjustment report from Revenue Reports System	Jan cris MA.doc	BLG-1-A-I-24	BA-MA
Monthly adjustment report from Revenue Reports System	March cris MA.doc	BLG-1-A-I-25	BA-MA
Monthly adjustment report from Revenue Reports System	Raw MA -JAN Metrics Cabs 011 .xls	BLG-1-A-I-26	BA-MA
Monthly adjustment report from Revenue Reports System	Raw MA-MAR Metrics CABS 03-00.xls	BLG-1-A-I-27	BA-MA
Internal metrics report	MA –JAN Metrics_01_00-new.xls	BLG-1-A-I-28	BA-MA
Internal metrics report	MA –MAR Metrics_03_00-new.xls	BLG-1-A-I-29	BA-MA
NY PSC Case 97-C-0139 11/15/99 Compliance Filing for New York State, - Carrier-to-Carrier Guidelines Performance Standards and Reports	Hard Copy	BLG-1-A-II-7	KPMG Consulting

Document	File Name	Location in Work Papers	Source
NY PSC Case 97-C-0139 2/28/00 Compliance Filing for New York State, - Carrier-to-Carrier Guidelines Performance Standards and Reports	Hard Copy	BLG-1-A-II-8	KPMG Consulting
Interview Summary & Document Request	Bill Acc KPMG Interview4.doc	BLG-1-A-II-9	KPMG Consulting
Interview Summary & Document Request	BLG1_interview summary.doc	BLG-1-A-II-10	KPMG Consulting
BA-NY and BA-MA results matrix	Metrics Test Cross Reference.doc	BLG-1-A-II-11	KPMG Consulting
CLEC Survey Results	Survey Summary.doc	BLG-1-A-II-12	KPMG Consulting
CLEC Survey Results	Condensed survey results.doc	BLG-1-A-II-13	KPMG Consulting
CLEC Focus Group Results	Final_Focus Group Notes_1_26.doc	BLG-1-A-II-14	KPMG Consulting
Spreadsheet documenting errors found in Bell Atlantic carrier bill timeliness summary document	sumtim99.errors.xls	BLG-1-A-II-15	KPMG Consulting
KPMG Consulting Final Report - August 6, 1999 Bell Atlantic OSS Evaluation Project Version 2.0: VI: Billing Domain Results and Analysis Section	Hard Copy (soft copy available)	BLG-1-A-II-16	KPMG Consulting (New York Public Service Commission (NYPSC) (http://www.dps.state.ny.us/tel271.htm)
Email from Bell Atlantic to KPMG Consulting accepting the interview Metrics process interview summary (January 10, 2000)	Hard Copy	BLG-1-A-III-1	KPMG Consulting/BA-MA
Email from Bell Atlantic to KPMG Consulting regarding DUF timeliness (February 3, 2000)	Hard Copy	BLG-1-A-III-2	KPMG Consulting/ BA-MA

Document	File Name	Location in Work Papers	Source
Email from Bell Atlantic to KPMG Consulting regarding DUF timeliness (February 10, 2000)	Hard Copy	BLG-1-A-III-3	KPMG Consulting/ BA-MA
Email from Bell Atlantic to KPMG Consulting regarding Carrier-to-Carrier reports (March 9, 2000)	Hard Copy	BLG-1-A-III-4	KPMG Consulting/ BA-MA
Email from Bell Atlantic to KPMG Consulting regarding Carrier-to-Carrier reports (March 15, 2000)	Hard Copy	BLG-1-A-III-5	KPMG Consulting/ BA-MA
Email from Bell Atlantic to KPMG Consulting regarding metric process change management (May 11, 2000)	Hard Copy	BLG-1-A-III-6	KPMG Consulting/ BA-MA

2.4.1 Data Generation/Volumes

This test did not rely on data generation or volume testing.

2.5 Evaluation Methods

The BLG1 Billing Metrics process review examines the procedures used by Bell Atlantic to measure, track and report DUF and Carrier Billing Timeliness, and Billing Accuracy. Data used in the evaluation of BA-MA's procedures were collected in the following methods:

1. Process Interviews – An interview was conducted with BA-MA staff responsible for the maintenance of the DUF and Carrier Bill timeliness metrics. An additional interview was held with Bell Atlantic staff responsible for the maintenance of the Billing Accuracy metric.

2. DUF Metric Process Walkthrough – A walkthrough of the DUF metric process was conducted with a member of the Bell Atlantic Program One Metrics unit.

3. CLEC Focus Group – A focus group was conducted on January 26, 2000. The objective of the CLEC focus group was to collect real-life input from CLECs concerning operational issues related to the six Billing Domain evaluations. CLEC input was used to highlight areas for KPMG Consulting to investigate. A total of six CLECs participated in the focus group.

4. CLEC Survey – A survey was used to collect real-life input from CLECs concerning operational issues related to the six Billing Domain evaluations. The survey was distributed to the CLEC community in December 1999. CLEC input was used to highlight areas for KPMG Consulting to investigate. Survey responses were submitted by six CLECs.

5. Metric Data Review – A review of sample DUF Timeliness, Carrier Bill Timeliness, and Billing Accuracy results generated by the KPMG Consulting CLEC during the BLG5 Functional Usage Evaluation and the BLG6 Functional Bill Cycle Evaluation.

6. Documentation Review – A review of all documents requested of BA-MA related to the metrics process evaluation was performed.

2.6 Analysis Methods

The Billing Process Metrics Evaluation included a checklist of evaluation criteria developed by the test manager during the initial phase of the Bell Atlantic-Massachusetts OSS Evaluation. These evaluation criteria, detailed in the *Master Test Plan*, provided the framework of norms, standards, and guidelines for the Billing Process Metrics Evaluation.

The data collected were analyzed employing the evaluation criteria referenced above.

3.0 Results Summary

This section identifies the evaluation criteria and test results.

3.1 Results & Analysis

The results of this test are presented in the tables below.

Table 1-5: BLG1 Evaluation Criteria and Results: DUF Timeliness

Test Cross-Reference	Evaluation Criteria	Result	Comments
	Definitions:		
BLG-1-1-1	Purpose of metric is defined.	Satisfied	Purpose of the timeliness metric was explained in the metrics process interview conducted December 22, 1999. The metric is used to identify timeliness issues related to DUF distribution.
BLG-1-1-2	Metric is specified.	Satisfied	According to information provided in the process interview and subsequent documentation, the standard for DUF timeliness has been set at 95% of DUFs sent within four business days. This measure is applicable for assessing timeliness of DUF files.

Test Cross-Reference	Evaluation Criteria	Result	Comments
	Measurement Process:		
BLG-1-1-3	Point of measurement is defined.	Satisfied	The measurement points for the DUF timeliness metric were identified during the process interview. BA-MA confirmed that the metric components and measurement points described in both the DUF North Job Aid and the Resale and CLEC Handbooks use the criteria defined by the Carrier-to-Carrier DUF timeliness metric description.
BLG-1-1-4	Timeliness of measurement is defined.	Satisfied	DUF timeliness measurements are taken daily. Reports on the metric percentage are created on a daily, weekly and monthly basis and routed to the corresponding Bell Atlantic distribution lists: Exchange Message Record (EMR) Daily Distribution, EMR Weekly Distribution; EMR Monthly Distribution.
BLG-1-1-5	Instrumentation (tools) are defined.	Satisfied	Information provided in the process interview and the process walkthrough identified the relevant tools involved with the process. The tools include SAS mainframe, MS Excel spreadsheets and Message Customer Record Information System (MCRIS) data. The use of these tools is documented in the DUF North Jobaid (sic).
BLG-1-1-6	The processing steps for measurement, data reduction and data display are defined.	Satisfied	DUF timeliness processing steps (i.e., availability of DUF usage through creation and forwarding of summaries) were identified in the DUF process walkthrough and corresponding documentation. The data collection piece of the timeliness process is automated for BA-MA (in CRIS). Reporting of DUF metrics requires manual intervention (SAS Mainframe). The SAS mainframe procedure for developing reports requires copying and pasting MS Excel data to specify the correct data for processing reports.

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-1-1-7	Algorithms are defined.	Satisfied	The metric calculation is described as follows: "Timeliness is calculated by subtracting the date of the switch call time stamp from the date in the usage record processing time stamp (i.e., non-work days are eliminated) and then adding one day to account for transmission to the CLEC." The additional day accounts for the actual day files are transmitted to the CLEC. Algorithms used to capture metrics data are embedded in the SAS and MS Excel programs. No problems or discrepancies were noted with the algorithms when examined during the DUF process walkthrough.
	Performance Standards and Norms:		
BLG-1-1-8	Standard or norm is identified.	Satisfied	The desired level of attainment, described in BLG-1-1-2, is documented in the Compliance Filing for New York State, Carrier-to-Carrier Guidelines Performance Standards, November 15, 1999.
BLG-1-1-9	Review process is defined.	Satisfied	A review process for DUF Timeliness reports is documented in the DUF North Job Aid. DUF measures are reviewed daily, weekly and monthly by Bell Atlantic staff listed on the EMR daily distribution list. When reviewers find timeliness performance drops below percentage standards, the timeliness issue is escalated within BA-MA. Specifically, this escalation process involves notifying the staff on the daily distribution list and initiating an investigation into the reason for the target fluctuation.
BLG-1-1-10	Metric ownership is defined.	Satisfied	A team of Bell Atlantic directors and managers comprise the metric review/ownership team. This team is notified when the percentage metric is not met and an investigation ensues. DUF timeliness for BA-MA is defined as 95% of records received within four business days of the usage record generation.

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-1-1-11	The Change Management procedures for making changes to the metric and/or performance standard are defined.	Satisfied	The Wholesale Metrics Change Control process, managed by the Operations Assurance organization, is the change management process applicable to all billing related metrics including DUF Timeliness, Bill Timeliness, and Billing Accuracy. Change Requests are issued by the Operations Assurance organization to Wholesale Billing Strategic Initiatives. For implementation of new metrics or modifications to existing metrics the Wholesale Billing Strategic Initiatives organization issues a Conceptual Initiative Definition (CID) to the Operations Assurance organization to initiate the implementation or modification process.
	Publication and Distribution:		
BLG-1-1-12	Measurement results are published and distributed.	Satisfied	The measurements are published and distributed. The Operations Excellence-Wholesale Metrics unit is responsible for final external publication and distribution of the DUF Timeliness metric in the Carrier-to-Carrier Performance Standards report. The Program One Metrics organization is responsible for internal publication of the DUF Timeliness results. During the test period, Bell Atlantic published and distributed results each month.
BLG-1-1-13	The published results are readily understandable.	Satisfied .	The DUF Timeliness metric is published in an external report – the Carrier-to-Carrier Performance Standards report. This report is clear and understandable. Internal publication of the DUF Timeliness metric is in an Excel spreadsheet report and is clear and understandable.

Table 1-6: BLG1 Evaluation Criteria and Results: Carrier Bill Timeliness

Test Cross-Reference	Evaluation Criteria	Result	Comments
	Definitions:		
BLG-1-2-1	Purpose of metric is defined.	Satisfied	The purpose of the timeliness metric as explained in the metrics interview is to identify timeliness issues related to Carrier Bill distribution.
BLG-1-2-2	Metric is specified.	Satisfied	The standard for billing timeliness is 98% of CABS bills sent within ten business days. This measure is applicable for assessing timeliness of all carrier bills.
	Measurement Process:		
BLG-1-2-3	Point of measurement defined.	Satisfied	Measurement dates are recorded at the switch ("trip" date) at the time usage records are submitted for billing by the billing system (CABS) upon completion of processing. Specifically, the master cycle runs/trips reseller bills on the 4th (for bills ending on the 30th of the previous month) and the 18th (for bills ending on the 15th of the current month). This switch date is the point where measurement begins; the metric period ends when CABS produces billing output for distribution. The difference, in days, represents the measurement interval.
BLG-1-2-4	Timeliness of measurement defined.	Satisfied	BA-MA has adopted the Carrier-to-Carrier bill timeliness metrics definition. The Carrier-to-Carrier Bill Timeliness metric definition is as follows: The percentage of CRIS paper carrier bills sent to the carrier, unless the CLEC requests special treatment, within ten business days of the bill date. The bill date is the end of the billing period for recurring, non-recurring and usage charges.

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-1-2-5	Instrumentation (tools) are defined.	Satisfied	The tools involved in the calculation of the billing timeliness metric are CABS and MS Excel spreadsheets. Data from the daily CABS email containing the CABS2 Wholesale Distribution Control Report is imported into a spreadsheet. The actual calculation is a manual process where the bill date is compared to the date when the bill is sent out. The Wholesale Technical Support group reviews daily reports to identify late billing data transmissions and submissions. The daily report aggregates into the monthly summary reports which contain a summary section providing the month's percent timely metric. Each day, the metric is reviewed by the Bell Atlantic Center Contact Staff Manager or Wholesale Technical Support group member. If there is a late transmission or submission (i.e., less than 98% sent within ten business days) an investigation ensues. This process is described in the Bell Atlantic Wholesale Bill Timeliness Methods and Procedures.
BLG-1-2-6	The processing steps for measurement, data reduction and data display are defined.	Satisfied	Bell Atlantic has created an instruction sheet with step-by-step instructions for calculating timeliness of individual bills and updating the metric summary information. This process is described in the Bell Atlantic Wholesale Bill Timeliness Methods and Procedures.

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-1-2-7	Algorithms are defined.	Satisfied	Measurement for the carrier billing timeliness metric begins with the bill trip start date and ends with the date CABS produces billing output for distribution. The difference, in days, represents the measurement interval. The date used to indicate when the billing data are available for distribution is the actual date that a tape cartridge or CD is sent to the client. In the case of an Network Data Mover (NDM) transmission, the date used to indicate when billing data is made available is the next business day after the actual transmission is made. Once the transmission is made, it is the responsibility of the CLEC to accept the transmission.
	Performance Standards and Norms:		
BLG-1-2-8	Standard or norm is identified.	Satisfied	The desired level of attainment is documented in test point BLG-1-2-2.
BLG-1-2-9	Review process is defined.	Satisfied	Bell Atlantic has created an internal metric review process. If there is a late or delayed transmission or submission, the Wholesale Technical Support Group investigates the matter and resolves related issue.
BLG-1-2-10	Metric ownership is defined.	Satisfied	Bell Atlantic's Wholesale Technical Support Group owns the process. Members of the Wholesale Technical Support Group are responsible for investigating files that are not transmitted or sent within ten business days. This process is described in detail in the Bell Atlantic Wholesale Billing Timeliness Methods and Procedures document.

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-1-2-11	The Change Management procedures for making changes to the metric and/or performance standard are defined.	Satisfied	The Wholesale Metrics Change Control process, managed by the Operations Assurance organization, is the change management process applicable to all billing related metrics including DUF Timeliness, Bill Timeliness and Billing Accuracy. Change Requests are issued by the Operations Assurance organization to Wholesale Billing Strategic Initiatives. For implementation of new metrics or modifications to existing metrics the Wholesale Billing Strategic Initiatives organization issues a Conceptual Initiative Definition (CID) to the Operations Assurance organization to initiate the implementation or modification process.
	Publication and Distribution:		
BLG-1-2-12	Measurement results published and distributed.	Satisfied	The measurements are published and distributed. The Operations Excellence-Wholesale Metrics unit is responsible for final external publication and distribution of the Billing Timeliness metric in the Carrier-to-Carrier Performance Standards report. The Wholesale Technical Support Group is responsible for internal publication of the Billing Timeliness results. During the test period, Bell Atlantic published and distributed results each month.
BLG-1-2-13	The published results are readily understandable.	Satisfied	The Billing Timeliness metric is published in an external report – the Carrier-to-Carrier Performance Standards report. This report is clear and understandable. Internal publication of the Billing Timeliness metric is in an MS Excel spreadsheet report and is clear and understandable.

Table 1-7: BLG1 Evaluation Criteria and Results: Billing Accuracy

Test Cross-Reference	Evaluation Criteria	Result	Comments
	Definitions:		
BLG-1-3-1	Purpose of metric is defined.	Satisfied	Purpose of the Billing Accuracy metric is used to identify accuracy issues related to billing errors.
BLG-1-3-2	Metric is specified.	Satisfied	In the Carrier-to-Carrier metric definitions, the billing accuracy metric is defined as "the percentage of carrier bills adjusted due to billing errors." At this time, no standard has been set for the Billing Accuracy metric. This measure is applicable for assessing accuracy of resale bills, which are produced in CRIS.
	Measurement Process:		
BLG-1-3-3	Point of measurement is defined.	Satisfied	The measurement points for the Billing Accuracy metric were identified during the process interview and documented in the Carrier-to-Carrier metrics definitions. The metric is measured by dividing the dollars adjusted for billing errors by total dollars billed.
BLG-1-3-4	Timeliness of measurement is defined.	Satisfied	The timing of the measurement for the Billing Accuracy metric was identified during the process interview. Data used to calculate the Billing Accuracy metric is available on the fourth day of each month. The metric is calculated and reviewed and a report is distributed internally by the tenth day of each month.

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-1-3-5	Instrumentation (tools) are defined.	Satisfied	CRIS data is captured and compiled into a Microsoft Word document by the Telecom Group Systems-Access Billing Systems and Billing & Customer Contact-New England Billing Development organizations. The CRIS data is forwarded to the Wholesale Billing Strategic Initiatives unit Specialist. In addition, the Specialist receives revenue and adjustment data from the CABS system. The Specialist manually inputs CABS and CRIS data into an MS Excel spreadsheet and completes the calculation using MS Excel formulas.
BLG-1-3-6	The processing steps for measurement, data reduction and data display are defined.	Satisfied	Billing Accuracy data is provided by the Telecom Group Systems-Access Billing Systems and Billing & Customer Contact-New England Billing Development organization. This data is manually inserted into MS Excel spreadsheets by the Wholesale Billing-Strategic Initiatives Specialist. The Specialist completes the calculation using MS Excel formulas and creates the Billing Accuracy metric report. Once completed, the report is forwarded to the Wholesale Billing Strategic Initiatives Senior. Specialist and Consultant for review. Once reviewed, the billing accuracy report is forwarded to the Operations Excellence-Wholesale Metrics unit for distribution and publication in the Carrier-to-Carrier Performance Standards report.

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-1-3-7	Algorithms are defined.	Satisfied	The calculation for the Billing Accuracy metric was identified in the process interview and is as documented in the Compliance Filing for New York State, Carrier-to-Carrier Guidelines Performance Standards, November 15, 1999. The calculation is as follows: Dollars adjusted for billing errors (numerator) *Divided by* Totals dollars billed (denominator) The metric is reported as a percentage.
	Performance Standards and Norms:		
BLG-1-3-8	Standard or norm is identified.	N/A	As explained in test Point BLG-1-3-2, the level of attainment for the billing accuracy has not been established by the telecommunications industry. Bell Atlantic does not have authority to establish the standard measure of attainment for the industry.
BLG-1-3-9	Review process is defined.	Satisfied	The Billing Accuracy metric report is reviewed by the Wholesale Billing Strategic Initiatives Senior Specialist and Consultant on the tenth of each month. The review includes checks for: ♦ Reasonableness ♦ Consistency ♦ Applicability The reviewers have the authority to investigate monthly variances in the metric. No investigations have occurred at the time of this report.

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-1-3-10	Metric ownership is defined.	Satisfied	It was identified through the process interview that Bell Atlantic's Revenue Reports System provides revenue and adjustment data to the Wholesale Billing Strategic Initiatives organization for accuracy metric report compilation. The Bell Atlantic Wholesale Billing-Strategic Initiatives unit is accountable for compiling and reviewing the accuracy metrics report. The Bell Atlantic Operations Excellence-Wholesale Metrics unit is accountable for disseminating the accuracy metric report both internally and externally.
BLG-1-3-11	The Change Management procedures for making changes to the metric and/or performance standard are defined.	Satisfied	The Wholesale Metrics Change Control process, managed by the Operations Assurance organization, is the change management process applicable to all billing related metrics including DUF Timeliness, Bill Timeliness, and Billing Accuracy. Change Requests are issued by the Operations Assurance organization to Wholesale Billing Strategic Initiatives. For implementation of new metrics or modifications to existing metrics the Wholesale Billing Strategic Initiatives organization issues a Conceptual Initiative Definition (CID) to the Operations Assurance organization to initiate the implementation or modification process.

Test Cross-Reference	Evaluation Criteria	Result	Comments
	Publication and Distribution:		
BLG-1-3-12	Measurement results published and distributed.	Satisfied	The measurements are published and distributed. The Operations Excellence-Wholesale Metrics unit is responsible for final external publication and distribution of Billing Accuracy metric in the Carrier-to-Carrier Performance Standards report. The Wholesale Billing Strategic Initiatives organization is responsible for internal publication of the Billing Accuracy results. Bell Atlantic published and distributed results of this measurement each month since January 2000, when they were first reported.
BLG-1-3-13	The published results are readily understandable.	Satisfied	The Billing Accuracy metric is published in an external report – the Carrier-to-Carrier Performance Standards report. This report is clear and understandable. Internal publication of the Billing Accuracy metric is in an MS Excel spreadsheet report and is clear and understandable.

B. Test Results: Billing Documentation Evaluation (BLG2)

1.0 Description

The Billing Documentation Evaluation analyzed billing documentation provided by Bell Atlantic-Massachusetts (BA-MA) for CLECs. The objective of this test was to provide an operational assessment of the process through which Bell Atlantic (BA) creates and publishes billing documentation and in turn to assess the billing documentation for content and usability.

2.0 Methodology

This section summarizes the test methodology.

2.1 Business Process Description

Bell Atlantic publishes customer documentation with billing specific information in the CLEC Handbook and the Resale Handbook. This customer documentation is meant to provide information across a wide spectrum of billing related topics and serves as a resource for Bell Atlantic wholesale customers. The documentation is published on the Bell Atlantic Wholesale Markets website and can be purchased on CD-ROM.

The content of this documentation is developed and updated regularly and is the result of industry-wide and CLEC input. Bell Atlantic regularly publishes new releases of this documentation.

2.2 Scenarios

Scenarios were not applicable to this test.

2.3 Test Targets & Measures

The test target was the identification of the processes through which BA-MA creates and publishes billing documentation and an assessment of the usability of documentation. Processes, sub-processes, evaluation measures, and associated test cross-reference numbers are summarized in the following table. The last column, "Test Cross-Reference," indicates where the particular measures are addressed in Section 3.1 "Results & Analysis."

Table 2-1: Test Target Cross-Reference

Process	Sub-Process	Evaluation Measure	Test Cross-Reference
Acquire Documentation	Receive current documentation	Availability of up-to-date documentation	BLG-2-1

Process	Sub-Process	Evaluation Measure	Test Cross-Reference
Evaluate Documentation	Evaluate documentation format	Organization of documentation Ease of Use of documentation	BLG-2-1, BLG-2-1, BLG-2-2
Evaluate Documentation	Evaluate documentation content	Comprehensiveness of documentation Accuracy of documentation	BLG-2-2, BLG-2-3

2.4 Data Sources

The data collected for the test are summarized in the table below.

Table 2-2: Data Sources for Billing Documentation Evaluation

Document	File Name	Location in Work Papers	Source
Resale, Volume I, Section 5.2 Roles and Responsibilities (September 1999)	(http://www.bellatlantic.com/wholesale/html/handbooks/resale/volume_1/r1s5_1.htm)	BLG-2-A-I-1	BA-MA
Resale, Volume III, Section 4.1 Bell Atlantic North Billing (September 1999)	(http://www.bellatlantic.com/wholesale/html/handbooks/resale/volume_3/r3s4_1.htm)	BLG-2-A-I-2	BA-MA
Resale, Volume III, Section 4.3.1 Overview and Process Flow (September 1999)	(http://www.bellatlantic.com/wholesale/html/handbooks/resale/volume_3/r3s4_3.htm)	BLG-2-A-I-3	BA-MA
Resale, Volume III, Section 4.3.3 Bill Content and Format (September 1999)	(http://www.bellatlantic.com/wholesale/html/handbooks/resale/volume_3/r3s4_3.htm)	BLG-2-A-I-4	BA-MA
Resale, Volume III, Section 4.6 Treatment and Collections (September 1999)	(http://www.bellatlantic.com/wholesale/html/handbooks/resale/volume_3/r3s4_6.htm)	BLG-2-A-I-5	BA-MA

Document	File Name	Location in Work Papers	Source
CLEC, Volume III, Section 9.1 Billing Introduction (March 2000)	(http://www.bellatlantic.com/wholesale/html/handbooks/clec/volume_3/c3s9_1.htm)	BLG-2-A-I-6	BA-MA
CLEC, Volume III, Section 9.5 Treatment and Collections (March 2000)	(http://www.bellatlantic.com/wholesale/html/handbooks/clec/volume_3/c3s9_5.htm)	BLG-2-A-I-7	BA-MA
CLEC/Resale, Volume II, Section 2.3 Public Network (Internet) (March 2000)	(http://www.bellatlantic.com/wholesale/html/handbooks/clec_resale/volume_2/cr2s2_3.htm)	BLG-2-A-I-8	BA-MA
Resale, Volume III, Section 4.3 Reseller Bills (September 1999)	(http://www.bellatlantic.com/wholesale/html/handbooks/resale/volume_3/r3s4_3.htm)	BLG-2-A-I-9	BA-MA
Resale, Volume III, Section 6.3.7 Bell Atlantic Charges to the Reseller (September 1999)	(http://www.bellatlantic.com/wholesale/html/handbooks/resale/volume_3/r3s6_3.htm)	BLG-2-A-I-10	BA-MA
CLEC, Volume III, 9.3 UNE Billing in Bell Atlantic-North (March 2000)	(http://www.bellatlantic.com/wholesale/html/handbooks/clec/volume_3/c3s9_3.htm)	BLG-2-A-I-11	BA-MA
Resale, Volume III, Section 4.2 Customer Usage Data (September 1999)	(http://www.bellatlantic.com/wholesale/html/handbooks/resale/volume_3/r3s4_2.htm)	BLG-2-A-I-13	BA-MA
CLEC, Volume III, Section 9.2 End Usage Data (March 2000)	(http://www.bellatlantic.com/wholesale/html/handbooks/clec/volume_3/c3s9_2.htm)	BLG-2-A-I-14	BA-MA
CLEC/Resale, Volume II, Section 4.6 Billing Operation (March 2000)	(http://www.bellatlantic.com/wholesale/html/handbooks/clec_resale/volume_2/cr2s4_6.htm)	BLG-2-A-I-15	BA-MA

Document	File Name	Location in Work Papers	Source
CLEC/Resale, Volume II, Section 4.7 Forms (March 2000)	(http://www.bellatlantic.com/wholesale/html/handbooks/clec_resale/volume_2/cr2s4_7.htm)	BLG-2-A-I-16	BA-MA
Resale, Volume III, Section 4.4 Claims and Adjustments (September 1999)	(http://www.bellatlantic.com/wholesale/html/handbooks/resale/volume_3/r3s4_4.htm)	BLG-2-A-I-17	BA-MA
CLEC, Volume III, Section 9.4 Claims and Adjustments (March 2000)	(http://www.bellatlantic.com/wholesale/html/handbooks/clec/volume_3/c3s9_4.htm)	BLG-2-A-I-18	BA-MA
Resale, Volume I, Section 4.4 TISOC (September 1999)	(http://www.bellatlantic.com/wholesale/html/handbooks/resale/volume_1/r1s4_4.htm)	BLG-2-A-I-19	BA-MA
Resale, Volume I, Section 8.1 Resale Services Contact List (September 1999)	(http://www.bellatlantic.com/wholesale/html/handbooks/resale/volume_1/r1s8_1.htm)	BLG-2-A-I-20	BA-MA
CLEC, Volume I, Section 8.1 Contact List (March 2000)	(http://www.bellatlantic.com/wholesale/html/handbooks/clec/volume_1/c1s8_1.htm)	BLG-2-A-I-21	BA-MA
CLEC/Resale, Volume II, Section 5.3 Help Desk Assistance Information (March 2000)	(http://www.bellatlantic.com/wholesale/html/handbooks/clec_resale/volume_2/cr2s5_3.htm)	BLG-2-A-I-22	BA-MA
Resale, Volume I, Section 8.3.1 Reseller Information (September 1999)	(http://www.bellatlantic.com/wholesale/html/handbooks/resale/volume_1/r1s8_3_1.pdf)	BLG-2-A-I-23	BA-MA
Resale, Volume I, Section 8.3.3 Reseller Checklist (September 1999)	(http://www.bellatlantic.com/wholesale/html/handbooks/resale/volume_1/r1s8_3_3.pdf)	BLG-2-A-I-24	BA-MA

Document	File Name	Location in Work Papers	Source
Resale, Volume I, Section 8.3.8 Bell Atlantic Resale Services Credit Form (September 1999)	(http://www.bellatlantic.com/wholesale/html/handbooks/resale/volume_1/r1s8_3_8.pdf)	BLG-2-A-I-25	BA-MA
CLEC/Resale, Volume II, Handbook Series Glossary (March 2000)	(http://www.bellatlantic.com/wholesale/html/handbooks/glossary.htm)	BLG-2-A-I-26	BA-MA
CLEC/Resale, Volume II, 4.7 Billing Forms (March 2000)	(http://www.bellatlantic.com/wholesale/html/handbooks/clec_resale/volume_2/cr2s4_7.htm)	BLG-2-A-I-27	BA-MA
CLEC, Volume 1, Section 8.5.7 Profile Forms	(http://www.bellatlantic.com/wholesale/html/handbooks/clec/volume_1/c1s8_5_7.pdf)	BLG-2-A-I-28	BA-MA
October 4, 1999 Industry Mailing	(http://www.bellatlantic.com/wholesale/html/clec_99/billast_c.htm)	BLG-2-A-I-29	BA-MA
January 11, 2000 Industry Mailing	(http://www.bellatlantic.com/wholesale/html/clec_00/01_11.htm)	BLG-2-A-I-30	BA-MA
Document Review Worksheets	BLG2 SME WKSHT.xls	BLG-2-B-II-4	KPMG Consulting
CLEC Survey Results	Survey Summary.doc	BLG-2-B-II-9	KPMG Consulting
CLEC Survey Results	Condensed survey results.doc	BLG-2-B-II-10	KPMG Consulting
CLEC Focus Group Results	Final_Focus Group Notes_1_26.doc	BLG-2-B-II-11	KPMG Consulting
KPMG Consulting Final Report - August 6, 1999 Bell Atlantic OSS Evaluation Project Version 2.0: VI: Billing Domain Results and Analysis Section	Hard Copy (soft copy available)	BLG-2-A-II-12	KPMG Consulting (New York Public Service Commission (NYPSC) http://www.dps.state.ny.us/tel271.htm)

Document	File Name	Location in Work Papers	Source
Email from Bell Atlantic to KPMG Consulting confirming the BA-MA documentation process detail (February 9, 2000)	Hard Copy	BLG-2-B-III-1	KPMG Consulting/BA-MA
Email sent by DTE to KPMG Consulting accepting the results of the BA-NY documentation process test (February 10, 2000)	Hard Copy	BLG-2-B-III-2	KPMG Consulting/BA-MA/DTE

2.4.1 Data Generation/Volumes

This test did not rely on data generation or volume testing.

2.5 Evaluation Methods

The BLG2 Billing Documentation Evaluation examined billing related documentation for topical coverage, depth of coverage and general usability. The Billing Documentation Evaluation consisted of two components, a process component and a content component.

KPMG Consulting met with Bell Atlantic personnel to review the Bell Atlantic process for creating and maintaining wholesale customer documentation. This process was assessed.

Selected BA-MA billing documentation was evaluated for content and usability. This evaluation considered the following:

- Coverage Adequacy – document covers all relevant topics with adequate depth,
- Explanatory Effectiveness – document provides accurate information, process descriptions (diagrams) and/or data definitions, and
- Organization/Usability – document is organized and provides tools that facilitate organization.

The selected billing documentation was organized into seven topic areas: High-Level Overview, Validating Bills, Validating Usage, Billing Operations, Processing Claims and Adjustments, Getting Help, and Miscellaneous.

A CLEC Focus Group was held to collect real-life input from CLECs concerning operational issues related to the six Billing Domain evaluations. CLEC input was used to highlight areas for KPMG Consulting to investigate. A total of six CLECs participated in the focus group.

A CLEC Survey was used to collect real-life input from CLECs concerning operational issues related to the six Billing Domain evaluations. CLEC input was used to highlight areas for KPMG Consulting to investigate.

2.6 Analysis Methods

The Billing Documentation Evaluation included a checklist of evaluation criteria developed by the test manager during the initial phase of the Bell Atlantic-Massachusetts OSS Evaluation. These evaluation criteria, detailed in the *Master Test Plan*, provided the framework of norms, standards, and guidelines for the Billing Documentation Evaluation.

The data collected were analyzed employing the evaluation criteria referenced above.

3.0 Results Summary

This section identifies the evaluation criteria and test results.

3.1 Results & Analysis

The results of this test are presented in the table below.

Table 2-3: BLG2 Evaluation Criteria and Results

Test Cross-Reference	Evaluation Criteria	Result	Comments
	Coverage Adequacy:		
BLG-2-1	Documentation covers all relevant topics with adequate depth.	Satisfied	Documents reviewed under the seven defined topic areas provided topical information with adequate breadth and depth to its wholesale customers.
	Explanatory Effectiveness:		
BLG-2-2	Documentation provides information that is accurate/correct, and makes use of process descriptions/diagrams and data definitions where appropriate.	Satisfied	Documents reviewed under the seven defined topic areas provided its wholesale customers with accurate topical information that explains the various topics discussed in customer documentation offerings.

Test Cross-Reference	Evaluation Criteria	Result	Comments
	Organization/Usability:		
BLG-2-3	Documentation is organized and provides organizational tools that facilitate navigation.	Satisfied	Documents reviewed under the seven defined topic areas provided topical information to its wholesale customers that is organized and usable.

C. Test Results: Billing Work Center/Help Desk Support Evaluation (BLG3)

1.0 Description

The Billing Work Center/Help Desk Support Evaluation analyzes work center/Help Desk processes developed by Bell Atlantic-Massachusetts BA-MA to provide support to Resellers and CLECs with billing related claims, questions, problems and issues. Basic functionality, management performance, escalation procedures, security information and capacity planning were evaluated.

2.0 Methodology

This section summarizes the test methodology.

2.1 Business Process Description

Two help entities exist: the Telecom Industry Services Operations Center (TISOC) billing work center, the primary focus of this test, and the Bell Atlantic System Support (BASS) Help Desk, which became effective in November of 1999.

TISOC

Within the TISOC billing work center organization, there are two units dedicated to providing support to BA-MA customers – a Resale Work Center and UNE work center. The Resale work center is located in Boston at 185 Franklin Street. The UNE work center is located in New York at 140 West Street.

The Resale and UNE billing work centers are responsible for handling customer requests for billing claims and adjustments and providing general customer assistance with billing problems and inquires. The Resale and UNE billing work center scope, as documented in the CLEC and Reseller Handbooks and in the TISOC work center interview, includes:

- Processing claims related to billing, collections and Daily Usage Feed (DUF) issues
- Processing inquiries related to billing, collections and Daily Usage Feed (DUF) issues

BASS

Bell Atlantic Systems Support Help Desk addresses technical issues concerning Daily Usage Feed, Billing Output Specifications (BOS), or Bell Atlantic Regenerated Media (BARM) files. These include the following:

- Re-sending Billing Information
- Investigating and Resolving NDM Transmission Problems
- Responding to Usage Questions
- Correcting Software Errors

2.2 Scenarios

Scenarios were not applicable to this test.

2.3 Test Targets & Measures

The test target was the evaluation of the process through which Resale and UNE customers are provided work center support by BA-MA for billing related problems, questions and issues. Processes, sub-processes, evaluation measures, and associated test cross-reference numbers are summarized in the following table. The last column, "Test Cross-Reference," indicates where the particular measures are addressed in Section 3.1 "Results & Analysis."

Table 3-1: Test Target Cross-Reference

Process	Sub-Process	Evaluation Measure	Test Cross-Reference
Receive Help Desk Call	Answer call	Timeliness of call	BLG-3-1-6, BLG-3-1-32
Receive Help Desk Call	Interface with user	Usability of user interface Availability of user interface	BLG-3-1-1, BLG-3-1-2, BLG-3-1-3, BLG-3-1-4, BLG-3-1-6
Receive Help Desk Call	Log call	Existence of call logging Accuracy of call logging	BLG-3-1-7
Receive Help Desk Call	Record severity code	Compliance of call logging - severity coding	BLG-3-1-7, BLG-3-1-8
Process Help Desk Call	Resolve user question, problem or issue	Completeness and consistency of process Accuracy of response	BLG-3-1-4, BLG-3-1-5, BLG-3-1-6, BLG-3-1-7, BLG-3-1-8, BLG-3-1-9, BLG-3-1-10, BLG-3-1-11
Receive Claim	File claim	Completeness and consistency of process Accuracy of response	BLG-3-1-26, BLG-3-1-27, BLG-3-1-28, BLG-3-1-29, BLG-3-1-30, BLG-3-1-31
Receive Claim	Process claim	Completeness, consistency, and timeliness of process	BLG-3-1-26, BLG-3-1-27, BLG-3-1-28, BLG-3-1-29, BLG-3-1-30, BLG-3-1-31

Process	Sub-Process	Evaluation Measure	Test Cross-Reference
Receive Claim	Issue adjustment when necessary	Completeness and consistency of process	BLG-3-1-26, BLG-3-1-27, BLG-3-1-28, BLG-3-1-29, BLG-3-1-30, BLG-3-1-31
Receive Claim	Disposition claim	Accuracy, completeness and reliability of disposition report	BLG-3-1-26, BLG-3-1-27, BLG-3-1-28, BLG-3-1-29, BLG-3-1-30, BLG-3-1-31
Close Help Desk Call	Post closure information	Completeness, consistency, and timeliness of process Accuracy of posting	BLG-3-1-11
Monitor Status	Track Status	Existence of status tracking capability Consistency and frequency of follow-up activities Availability of jeopardy notification	BLG-3-1-10, BLG-3-1-11, BLG-3-1-12
Monitor Status	Report Status	Completeness and consistency of reporting process Accuracy and timeliness of report Accessibility of status report	BLG-3-1-10, BLG-3-1-11, BLG-3-1-12
Request Escalation	Identify escalation procedure	Existence of procedure	BLG-3-1-20, BLG-3-1-21, BLG-3-1-22, BLG-3-1-23, BLG-3-1-24, BLG-3-1-25
Request Escalation	Evaluate escalation procedure	Completeness of the procedure Consistency of the process	BLG-3-1-20, BLG-3-1-21, BLG-3-1-22, BLG-3-1-23, BLG-3-1-24, BLG-3-1-25
Manage Workforce Capacity	Identify work force planning procedures	Existence of procedure	BLG-3-1-14, BLG-3-1-15, BLG-3-1-16,

Process	Sub-Process	Evaluation Measure	Test Cross-Reference
			BLG-3-1-17, BLG-3-1-18, BLG-3-1-19
Manage Workforce Capacity	Evaluate work force planning procedures	Completeness of procedure	BLG-3-1-14, BLG-3-1-15, BLG-3-1-16, BLG-3-1-17, BLG-3-1-18, BLG-3-1-19
Manage Workforce Capacity	Review staffing plans	Scalability of staff volume	BLG-3-1-14, BLG-3-1-15, BLG-3-1-16, BLG-3-1-17, BLG-3-1-18, BLG-3-1-19
Provide Security and Integrity	Provide secured access	Completeness and applicability of security procedures, profiles, and restrictions Controllability of intra-company access	BLG-3-1-15
Manage the Help Desk Process	Provide management oversight	Completeness and consistency of operating management practices Controllability, efficiency and reliability of process Completeness of process improvement practices	BLG-3-1-16, BLG-3-1-17, BLG-3-1-18, BLG-3-1-19

2.4 Data Sources

The data collected for the test are summarized in the table below.

Table 3-2: Data Sources for Billing Work Center/Help Desk Support Evaluation

Document	File Name	Location in Work Papers	Source
Bell Atlantic Wholesale Website – Customer Documentation Section	http://www.bellatlantic.com/wholesale/	BLG-3-A-I-1	BA-MA
Bell Atlantic Wholesale Website – Resources Section	http://www.bellatlantic.com/wholesale/html/resources.htm	BLG-3-A-I-2	BA-MA
Bell Atlantic Help Desk organization presentation document	CLEC Presentation-Operation Support.pdf	BLG-3-A-I-3	BA-MA
Bell Atlantic Help Desk organization presentation document	WCCC_FLOWS.pdf	BLG-3-A-I-4	BA-MA
Bell Atlantic Help Desk organization presentation document	wccc-config.pdf	BLG-3-A-I-5	BA-MA
Work Center/Help Desk process diagrams	Inquiry&ClaimsProcess.ppt	BLG-3-A-I-6	BA-MA
Monthly CARMA Report (January 1999, April 1999, November 1999)	Hard Copy	BLG-3-A-I-7	BA-MA
TISOC/UNE Methods ON LOTUS NOTES (view by subject)	Hard Copy	BLG-3-A-I-8	BA-MA

Document	File Name	Location in Work Papers	Source
Resale Daily Collection Report (March 15, 1999, August 15, 1999, October 15, 1999)	Rsbne348.doc	BLG-3-A-I-9	BA-MA
Month End Collection Report (February 1999, June 1999, November 1999)	North Data-Nov 99.xls	BLG-3-A-I-10	BA-MA
Example BOSS print out with, 1) open status, 2) closure comments (February 1999, June 1999, September 1999)	Hard Copy	BLG-3-A-I-11	BA-MA
BASS Type 1 Severity 1 Change Escalation Process	Hard Copy	BLG-3-A-I-12	BA-MA
October Bell Atlantic Industry Mailing regarding BASS Help Desk implementation	Hard Copy	BLG-3-A-I-13	BA-MA
BASS Help Desk Billing Data Collection Template	BASS CLEC form.doc	BLG-3-A-I-14	BA-MA
Bell Atlantic System Support Help Desk Status and Tracking Process Document	Hard Copy	BLG-3-A-I-15	BA-MA
CLEC Interface Outage and Type 1 Notification Process	Hard Copy	BLG-3-A-I-16	BA-MA
Sample BASS call history spreadsheet (October 1999)	KPMG1099.xls	BLG-3-A-I-17	BA-MA

Document	File Name	Location in Work Papers	Source
Sample BASS call history spreadsheet (November 1999)	NovKPMGsc.xls	BLG-3-A-I-18	BA-MA
Sample BASS Help Desk Trouble Tickets	September Tickets.xls	BLG-3-A-I-19	BA-MA
Capacity Management interview documentation	Modelview.xls	BLG-3-A-I-20	BA-MA
Capacity Management interview documentation	Sampson orgchart.opx	BLG-3-A-I-21	BA-MA
Claim tracking system documentation	Kpmg claim sample.xls	BLG-3-A-I-22	BA-MA
Customer Service Activation Letter (CSAL) Handbook	Hard Copy	BLG-3-A-I-23	BA-MA
Work Center Interview Summary	BLG3_is-wc.doc	BLG-3-B-II-9	KPMG Consulting
Bass Help Desk Interview Summary	(BLG3_is-bass.1.doc	BLG-3-B-II-10	KPMG Consulting
Bass Help Desk Interview Summary	BLG3_is-bass.2.doc	BLG-3-B-II-11	KPMG Consulting
Capacity Management Interview Summary	BLG3_interview_capacity planning.doc	BLG-3-B-II-12	KPMG Consulting
BLG6 Call Log.doc	BLG6 TISOC Call Log.doc	BLG-3-B-II-13	KPMG Consulting
CLEC Survey Results	Survey Summary.doc	BLG-3-B-II-15	KPMG Consulting

Document	File Name	Location in Work Papers	Source
CLEC Survey Results	Condensed survey results.doc	BLG-3-B-II-16	KPMG Consulting
CLEC Focus Group Results	Final_Focus Group Notes_1_26.doc	BLG-3-B-II-17	KPMG Consulting
KPMG Consulting Final Report - August 6, 1999 Bell Atlantic OSS Evaluation Project Version 2.0: VI: Billing Domain Results and Analysis Section	Hard Copy (soft copy available)	BLG-1-B-II-18	KPMG Consulting (New York Public Service Commission (NYPSC) (http://www.dps.state.ny.us/tel271.htm)
Bell Atlantic System Support Help Desk Process Validation - Jennifer Stocker	Hard Copy	BLG-3-B-III-1	KPMG Consulting/BA-MA
Process improvement & capacity management clarification email, (June 30, 2000)	Hard Copy	BLG-3-B-III-2	KPMG Consulting/BA-MA
Process improvement & capacity management clarification email (July 6, 2000)	Hard Copy	BLG-3-B-III-3	KPMG Consulting/BA-MA
Process improvement & capacity management clarification email, (July 6, 2000)	Hard Copy	BLG-3-B-III-4	KPMG Consulting/BA-MA
Process improvement & capacity management clarification email (July 6, 2000)	Hard Copy	BLG-3-B-III-5	KPMG Consulting/BA-MA
WCCC Rollout External Communication	Hard Copy	BLG-3-B-III-6	KPMG Consulting/BA-MA

2.4.1 Data Generation/Volumes

This test did not rely on volume testing.

Data was gathered from interviews, process walkthroughs and documentation reviews. In addition, calls addressing CRIS (Customer Record Information System) and CABS (Carrier Access Billing System) billing were made to the Bell Atlantic work centers. These were related to questions or issues that came up during the course of the BLG6 Functional Bill Cycle Evaluation.

2.5 Evaluation Methods

The Billing Work Center/Help Desk Support Evaluation was conducted using process interviews and review of related Bell Atlantic documentation requested by KPMG Consulting. These were supplemented by calls placed by the test team to the billing work centers.

The following provides additional detail on the procedures used to evaluate the BLG3 Billing Work Center/Help Desk Support process:

1. Process Interviews – An interview was conducted with Bell Atlantic staff responsible for the TISOC Resale and UNE work centers.

2. TISOC Reseller Work Center Walkthrough – A walkthrough of the TISOC Reseller work center process was conducted with a Bell Atlantic Senior Specialist.

3. CLEC Focus Group – A focus group was conducted to collect real-life CLEC input concerning operational issues related to the six Billing Domain evaluations. This input was used to highlight areas for KPMG Consulting to investigate. A total of six CLECs participated in the focus group.

4. CLEC Survey – A survey was used to collect real-life input from CLECs concerning operational issues related to the six Billing Domain evaluations. The survey was distributed to the CLEC community in December, 1999. CLEC input was used to highlight areas for KPMG Consulting to investigate. Six CLECs submitted survey responses.

5. Documentation Review – A documentation review was conducted of all documents provided by Bell Atlantic for the work center/Help Desk Support Evaluation.

6. Transaction Testing Results Review – KPMG Consulting evaluated test calls made to the TISOC Resale and UNE work centers as part of BLG6.

2.6 Analysis Methods

The Billing Work Center/Help Desk Support Evaluation included a checklist of evaluation criteria developed by the test manager during the initial phase of the Bell Atlantic-Massachusetts OSS Evaluation. These evaluation criteria, detailed in the *Master Test Plan*, provided the framework of norms, standards, and guidelines for the Billing Work Center/Help Desk Support Evaluation.

The data collected were analyzed employing the evaluation criteria referenced above.

3.0 Results Summary

This section identifies the evaluation criteria and test results.

3.1 Results & Analysis

The results of this test are presented in the table below.

Table 3-3: BLG3 Evaluation Criteria and Results

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-3-1-1	Help Desk responsibilities and activities are defined.	Satisfied	There are two billing work centers (TISOCs) dedicated to New England, one with a focus on UNE; the other with a focus on Resale. Team leaders, one assigned to each center, have management responsibility for the centers. In November 1999 the Bell Atlantic System Support (BASS) Help Desk was implemented. The BASS Help Desk's billing related responsibilities are separate from those of the work centers. Information describing the role of the TISOC and the BASS Help Desk is available in the CLEC handbook. The TISOC and the BASS Help Desk will refer callers between each other if necessary to resolve an issue.
BLG-3-1-2	Scope of work center/Help Desk services covers customer requirements.	Satisfied	Information provided in the work center/Help Desk process interviews, walkthroughs and documentation show that in BA-MA, the TISOC work center support process covers customer requirements including: ♦ Claims ♦ Adjustments ♦ Collections ♦ General Inquiries Customer questions or problems that cannot be handled by the work centers are referred to other Bell Atlantic units. The BASS Help Desk handles technical issues related to billing data, usage data and connectivity.

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-3-1-3	Scope and objectives of the work center and Help Desk are defined, documented, and communicated to customers.	Satisfied	Information pertaining to the TISOC work centers' scope and objectives is found in the Bell Atlantic's CLEC and Reseller handbooks. The Bell Atlantic Resale Handbook, Volume I, Section 4.4.1 - 4.4.2, defines the role of Billing Representative as being responsible for answering account inquiries and handling billing claims and adjustments.
BLG-3-1-4	A complete (e.g., beginning-to-end) description of the process is documented.	Satisfied	TISOC work center and BASS Help Desk process descriptions are documented. Process diagrams with supporting detail were provided by BA-MA outlining the work center process. Detailed descriptions of the BASS Help Desk support process are located in the Industry Change Management Processes section of the Bell Atlantic Wholesale Markets website.
BLG-3-1-5	The process includes procedures for addressing errors and exceptions.	Satisfied	The TISOC work center and BASS Help Desk support processes include error adjustment procedures. As part of the TISOC work center Adjustment Process, Representatives conduct follow-up reviews of manual adjustments prior to the bill date to ensure that an adjustment has been completed correctly by the Accounting Department. For mechanized adjustments, Representatives conduct follow-ups on the next bill date to ensure the adjustment amount appears correctly. In addition, the work center team leads and manager conduct ad-hoc reviews of the work in progress by the work center Representatives. The leads and manager look for errors and check for compliance with work center procedures. They also monitor timeliness of help responses.

Test Cross-Reference	Evaluation Criteria	Result	Comments
	Process:		
BLG-3-1-6	Process includes procedures for resolving calls in a timely and efficient manner.	Satisfied	The TISOC work centers have procedures in place to help ensure timely resolution of issues. Bell Atlantic commits to returning calls within 24 hours. For claim inquiry and resolution BA-MA adopts an informal metric which is 30 days. Although not a procedure formally documented, team leaders review claim information in CARMA once a month to assess whether outstanding claims exist and address outstanding claims to help ensure timely resolution. Procedures are also in place for resolving escalated issues. Each of the documented BA-MA billing escalation procedure steps has a corresponding 24-hour response requirement. The BASS Help Desk has procedures in place to help ensure timely resolution of issues. BA-MA Representatives check on resolution status by reviewing open trouble tickets until they are brought to closure. The resolution target time is seven days. If resolution is not achieved by then, the procedure calls for escalation.
BLG-3-1-7	Process includes complete and consistent call intake procedures (logging and acknowledgment).	Satisfied	The TISOC work center support process call intake procedures are used when handling calls relating to claims and adjustments. These calls are manually recorded by the work center Representatives on the call intake form, Contact Form No. 1 (CF1). The BASS Help Desk support process entails complete procedures for call intake. BASS Help Desk procedures require that trouble tickets be opened for all incoming calls relating to technical billing issues (e.g., DUF data files and connectivity issues). The process also contains procedures for logging and acknowledging all help calls. Billing Problem Entry Forms (BPE) are completed for billing related calls and forwarded to billing support.

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-3-1-8	Process defines criteria and procedure for severity coding Help Desk calls.	Satisfied	BA-MA identified that it is the intent of the TISOC to seek resolutions as quickly as possible. As such, all calls to the TISOC are treated with the same level of priority or severity. BASS Help Desk calls are severity coded.
BLG-3-1-9	Help Desk includes procedures for referral and tracking of referral (both into and out of Help Desk).	Satisfied	TISOC work center representatives identify calls that need to be referred. The representatives record referral information on the Contact Form No. 1 and provide contact information of the referral department to the customer. Resolution of referred calls becomes the responsibility of the organization to which the customer was referred. The BASS Help Desk tracks referred help desk calls by the trouble ticket number. The BASS Help Desk support process also includes procedures for checking on status of referred questions.
BLG-3-1-10	Process includes consistent procedure for jeopardy notification.	Satisfied	Jeopardy processes exist for notifying customers of an impending account embargo application. An account embargo is applied when a customer fails to remit payment of charges due. BA-MA provides 30 days written notice of the embargo. Bell Atlantic internal documentation for jeopardy procedures are located in the CSAL Handbook.
BLG-3-1-11	Process includes consistent procedure for closure posting.	Satisfied	Both the TISOC work center and the BASS Help Desk support processes include closure posting procedures. The CF1 is used to track the status of calls, including closure. Monthly claim status reports provide updates on closed claims. The BASS Help Desk attempts to resolve and close issues right away. For issues that can't be closed immediately, BASS updates or closes the customer inquiry within 24 hours. Thereafter, BASS reviews the issue and updates the customer every 48 hours until five days lapse. The issue is then escalated. BASS processes call for closure only after the CLEC agrees the issue is resolved.

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-3-1-12	Process includes consistent procedure for status tracking and management reporting.	Satisfied	TISOC work center Representatives and team leaders utilize status tracking mechanisms. Although review procedures are not formally documented, BA-MA identified that TISOC work center team leaders and managers review status and management reports. The systems involved in the review process include, BOSS, CARMA, and CRIS. The BOSS system tracks billing inquiry information and status, and produces monthly management reports for both UNE and Resale. CARMA tracks inquiry and status information, and produces monthly management reports for Resale specific issues. CABS and CRIS track billing status information for UNE specific inquiries. The BASS Help Desk support process includes procedures for management review. Further detail regarding BASS Help Desk management review procedures are detailed in the RMI6 System Support Help Desk Functional Review.
BLG-3-1-13	Process includes consistent procedure for documenting unresolved Help Desk calls.	Satisfied	TISOC work center procedures for addressing unresolved help desk calls exist. Representatives retain responsibility for tracking unresolved calls for their accounts and bringing them to the attention of their team leader. Team leaders' have objectives to respond within 24 hours. If a team leader cannot resolve a call, he or she forwards the inquiry to the TISOC manager who tries to resolve the call within 24 hours. Team leaders review claim information monthly to assess whether outstanding claims exist. The BASS Help Desk tracks and monitors unresolved help desk calls via trouble ticket numbers.

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-3-1-14	Process includes consistent procedure for capacity planning.	Satisfied	Prior to April 1, 1999, capacity management decisions (human resources and physical space issues) were based on the Bell Atlantic's New York Acceptable Sourcing Model for capacity issues. Beginning the Fall, 1999, the Billing Collections and Operations Center (BCOC) began new capacity planning initiatives. Activities include tracking and housing work item volumes for the BCOC. This volume information is housed in the Interexhange Carrier Operations Reporting System (ICORS). In addition to volume, ICORS will house the average time it takes to perform work. Planning initiatives will continue for the remainder of the year, with implementation of a productivity measurement and headcount-forecasting tool by the end of March 2001. The initiatives, and ultimately the proposed tool will support capacity management decisions. BASS Help Desk capacity management processes are evaluated in the RMI6 System Support Help Desk Functional Review.
BLG-3-1-15	Process includes procedures for maintaining security and integrity of data access controls.	Satisfied	BA-MA utilizes standard unique user ID security controls. Retail Associates are blocked from accessing Wholesale billing information.
	Performance Measurement and Reporting:		
BLG-3-1-16	Process includes procedures for obtaining CLEC feedback on the effectiveness of the Help Desk.	Satisfied	BA-MA's TISOC work centers receive indirect feedback through Account Managers and various customer forums. Units outside the Bell Atlantic Billing organization are currently conducting customer feedback surveys. Bell Atlantic indicated that similar surveys might be conducted for TISOC work center customers in the future.

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-3-1-17	Process performance measures are defined and measured.	Satisfied	The internal target resolution time for claims is thirty days. TISOC work center Representatives and team managers review the CARMA monthly report to ensure that claims have been addressed within 30 days. An additional internal metric exists which requires acknowledgement of receipt of customer calls within 48 hours. Additionally, the CATS system tracks all claims from the date a claim is submitted to the date a claim is closed and provides a summary of this timeliness measure. BASS Help Desk support process performance measures are evaluated in detail in the RMI6 System Support Held Desk Functional Review.
BLG-3-1-18	Responsibilities for tracking performance are assigned.	Satisfied	TISOC work center team leaders are responsible for work center Representatives' performance reviews and tracking performance. The TISOC manager reviews the performance of team leaders. The Bell Atlantic corporate standard requires two formal performance reviews each year. The RMI6 System Support Help Desk Functional Review describes the BASS Help Desk management policies including performance tracking.
BLG-3-1-19	Process improvement procedures are defined and responsibilities assigned.	Satisfied	In 4Q 1999 the Wholesale Billing group underwent a review by an independent auditor to identify and implement process improvement initiatives. Throughout 1Q 2000 and 2Q 2000 the process improvement opportunities identified in the audit were piloted and implemented. The Vice President of Wholesale Billing Operations and the Director of Wholesale billing operations are responsible for implementing process improvements. The BASS Help Desk process improvement procedures and responsibilities are evaluated in the RMI6 System Support Help Desk Functional Review.

Test Cross-Reference	Evaluation Criteria	Result	Comments
	Escalation Procedures:		
BLG-3-1-20	Process includes consistent procedures for escalating user issues/problems. Overall escalation flow procedure(s) exist. Each step has associated criteria for escalation.	Satisfied	Escalation procedures exist for both the TISOC work center and the BASS Help Desk. Descriptions of the TISOC work center support escalation procedures include associated criteria and are available to customers in the Resources section of the Bell Atlantic Wholesale Markets website. Although documented escalation procedures specify claims escalation, it was identified in the process interviews that this procedure is applicable for non-claim issues as well. Descriptions of the BASS Help Desk escalation processes are available to customers in the Customer Documentation section (Industry Change Management Processes subsection) of the Bell Atlantic Wholesale Markets website.
BLG-3-1-21	Each escalation step has responsible parties and documented contact information.	Satisfied	Responsible work center parties and their associated contact information is provided up to the Director level in the Resale Handbook, Volume I, Section 8.1 and up to the Vice President of Billing and Collection in the CLEC Handbook, Volume 1, Section 8.1. In addition, work center Representatives serve as the primary help contact to their assigned CLEC/Reseller. Assignment information is available to the CLECs upon calling into the work center. In addition, it was identified in the process interview as well as the CLEC survey and focus group Account Managers as serve as primary contacts for CLECs.
BLG-3-1-22	There is an escalation process owner responsible for overall performance and performance improvement.	Satisfied	There are multiple escalation process owners. BA-MA is clear who has responsibility for each escalation level. According to interviews, the majority of escalation issues do not proceed beyond the team leader level. Both the UNE and Resale team leaders track their escalated issues.

Test Cross-Reference	Evaluation Criteria	Result	Comments
			BASS Help Desk escalation procedures and owners are described in the RMI6 System Support Held Desk Functional Review.
BLG-3-1-23	Information requirements and information transmission for each step are defined.	Satisfied	For the TISOC, information requirements and information transmission procedures for claims and other issues are formally documented. Information transmission procedures for the BASS Help Desk are described in the RMI6 System Support Help Desk Functional Review.
BLG-3-1-24	The problem submitter (client) is kept informed of progress, lack of progress and/or issues affecting resolution.	Satisfied	Response times are negotiated with customers when inquiries or claims are made. At any time during the process, customers can contact the work center for a status update. Representatives occasionally send informal updates to CLECs via email. BASS Help Desk resolution status/progress procedures are described in the RMI6 System Support Held Desk Functional Review help desk evaluation.
BLG-3-1-25	Problem status is tracked and tracking information is readily accessible.	Satisfied	While there is no real-time customer accessible interface for status checking, tracking information may be obtained by calling the BA-MA representative. Reports detailing the status of open claims and recently closed claims are distributed to the CLECs on a monthly basis. The status tracking procedure for the BASS Help Desk uses trouble tickets and defined status timeframes.

Test Cross-Reference	Evaluation Criteria	Result	Comments
	Adjustment Specific Scope:		
BLG-3-1-26	Procedures for accepting adjustment requests are documented.	Satisfied	Procedures for accepting adjustments and adjustment requests exist. These are documented in the CLEC and Reseller Handbooks and associated webpage updates. (Resale Handbook, Volume III, Section 4.4; CLEC Handbook, Volume III, Section 9.4.) Links to online forms are provided, and claim and adjustment requests are accepted via fax and email.
BLG-3-1-27	Process includes consistent procedures for issuing adjustments.	Satisfied	The adjustment process was identified in the process interview and is documented for use by TISOC work center Representatives in the Customer Service Activation Letter (CSAL) Handbook.
BLG-3-1-28	Responsibilities, process routing, process intervals and adjustment authorization levels are defined and documented.	Satisfied	Process routing, process intervals and adjustment authorization levels are defined and documented as BA-MA internal business rules (CSAL Handbook).
BLG-3-1-29	CLEC adjustment request documentation and transmission requirements are documented and readily available to CLECs.	Satisfied	Adjustment request and transmission requirement documentation can be found in the CLEC and Reseller Handbooks and associated webpage updates - Resale Handbook, Volume III, Section 4.4 and the CLEC Handbook, Volume III, Section 9.4.
BLG-3-1-30	CLECs have convenient access to status of adjustment requests.	Satisfied	While there is no real time customer accessible interface for checking adjustment request status, monthly reports detailing the status of open claims and recently closed claims are distributed to the CLECs.

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-3-1-31	CLECs are notified of status or schedule changes, and associated reasons or open issues.	Satisfied	Procedures for notifying CLECs exist and are identified in process diagrams and corresponding task description detail in the internal Bell Atlantic document, Inquiry & Claims Process. CLECs are first notified upon TISOC receipt of a claim, and then on or before the resolution commitment date. Status calls are made to CLECs throughout the claim process. A TISOC work center representative will schedule additional follow-up calls in the case of an extended resolution period. Once the claim is resolved, the representative will contact the CLEC to advise about the claim findings. In cases where adjustments have been granted, representatives follow up to ensure accurate adjusting. The BASS Help Desk support process contains similar notification processes.
	Test Calls to Billing Work Center:		
BLG-3-1-32	The response was provided in a timely manner.	Satisfied	Of the calls placed to the TISOC Billing Work Center by the test team, 90% were responded to or resolved within 24 hours. Bell Atlantic's standard commitment is to respond within 24 hours.
BLG-3-1-33	The responsible Bell Atlantic representative provided an actionable resolution.	Satisfied	All of the 11 issues called into the TISOC Billing Work Center by the test team were resolved. KPMG Consulting's experience was that troubleshooting was sometimes an iterative process which required multiple calls.

D. Test Results: Usage Return Process Evaluation (BLG4)

1.0 Description

The Usage Return Process Evaluation (BLG4) is an analysis of the procedures and related documentation used by Bell Atlantic-Massachusetts (BA-MA) to process usage returns. Returning usage refers to an action taken by a Competitive Local Exchange Carrier (CLEC) when usage records received on Daily Usage Feeds (DUFs) are believed to contain errors. Returning usage is a sub-process of the broader usage claims process.

When a CLEC believes an individual usage item or group of usage items contains errors, the CLEC may initiate a usage claim. BA-MA is obligated to resolve the claim by correcting the usage, issuing an adjustment, or determining that the CLEC claim is not valid. BA-MA may require the CLEC to transmit the erred usage back to BA-MA with reason codes so an investigation of the errors can occur. The procedures followed by BA-MA follow those described in the current Exchange Message Interface (EMI) guidelines issued by the Ordering and Billing Forum (OBF).

The results of this test are reported in section 3.1. This test was composed of two sub-tests, a Procedural Evaluation and a Transaction-Based Evaluation. Additionally, three sub-processes were involved in evaluating the timeliness, consistency, and accuracy of handling usage errors as performed by BA-MA.

The three sub-processes considered:

- BA-MA receives erred usage;
- BA-MA sends corrections when necessary; and
- BA-MA provides item status for all returned records.

The BLG4 test relied on the development of evaluation checklists to facilitate a structured walkthrough of the return process with BA-MA representatives and the review of BA-MA process documentation. In addition, DUF records generated under the Massachusetts Billing Functional Usage Evaluation (BLG5) were subjected to a usage return claim. The test team observed and documented the interactions with Bell Atlantic in submitting returns to verify that the procedures described by Bell Atlantic during the process evaluation were followed in practice. This test was known as the "Transactional Evaluation."

2.0 Methodology

This section summarizes the test methodology.

2.1 Business Process Description

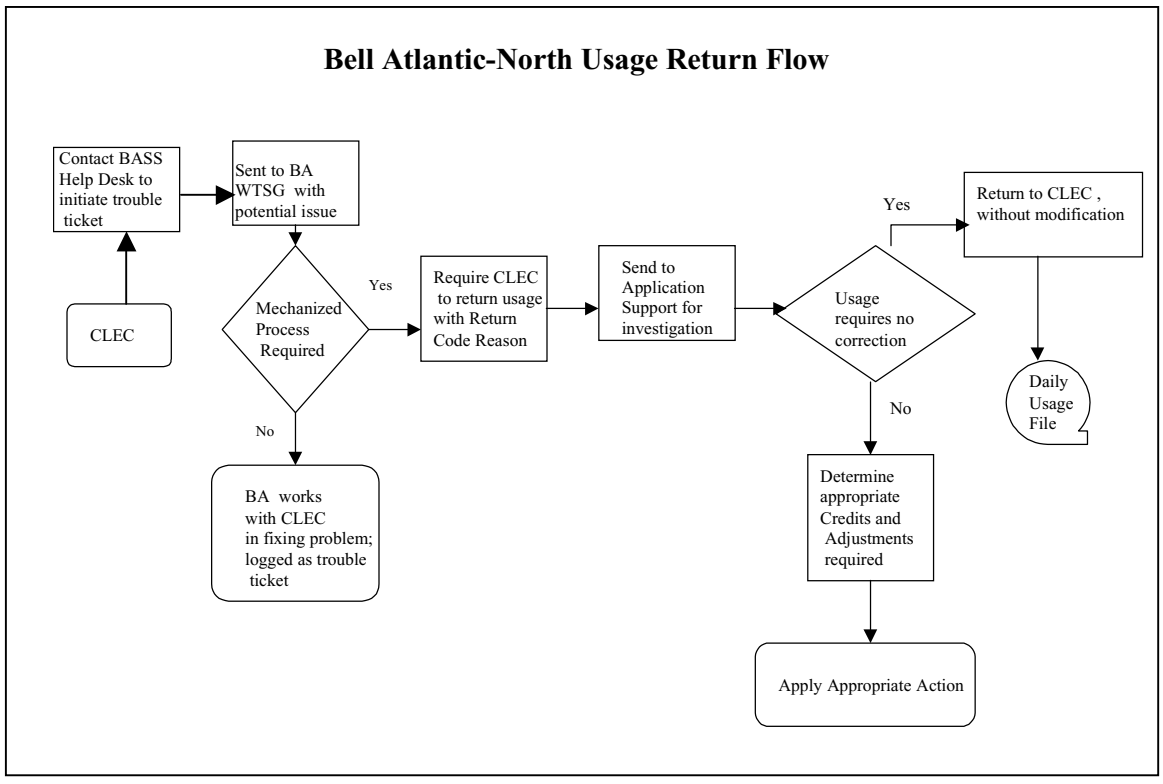
After reviewing a DUF file received from BA-MA, a CLEC may determine that some records contain invalid or incorrect data, or that duplicate or invalid records are contained in the file.

When this happens, the CLEC is responsible for notifying the Bell Atlantic System Support (BASS) Help Desk, repackaging the erred records, including original headers and trailers, and returning these records to BA-MA. A trouble ticket is created and forwarded to the Wholesale Technical Support Group (WTSG), which then contacts the CLEC. The CLEC must adjust two fields on each record to indicate the record is being returned and the reason for the return. The fields that need to be changed and their possible values are described in the EMI guidelines issued by the Ordering and Billing Forum (OBF).

If the returned records have valid errors, BA-MA is obliged to investigate and resolve them. If the claim is resolved in the CLEC's favor, BA-MA will either issue a billing adjustment or send a series of records that will correct the error. If corrections to the returned records are not warranted, the CLEC is advised and the unmodified records are returned to the CLEC.

The BA-MA usage return process is depicted in the following diagram.

Figure 4-1: Bell Atlantic-North Usage Return Process



2.2 Scenarios

Scenarios were not applicable to this test.

2.3 Test Targets & Measures

The test target was the DUF: Process Returns. Processes, sub-processes, evaluation measures, and associated test cross-reference numbers are summarized in the following table. The last column, "Test Cross-Reference," indicates where the particular measures are addressed in Section 3.1 "Results & Analysis."

Table 4-1: Test Target Cross-Reference

Process	Sub-Process	Evaluation Measure	Test Cross-Reference
Process Returns	BA-MA receives erred usage	Completeness of usage return procedures	BLG-4-1-1, BLG-4-1-2, BLG-4-1-3, BLG-4-1-4, BLG-4-1-5, BLG-4-1-7, BLG-4-1-8, BLG-4-1-9, BLG-4-1-10, BLG-4-1-11, BLG-4-1-12, BLG-4-2-1, BLG-4-2-2
Process Returns	BA-MA sends corrections when necessary	Accuracy, completeness and timeliness of corrections	BLG-4-1-1, BLG-4-1-2, BLG-4-1-3, BLG-4-1-5, BLG-4-1-6, BLG-4-1-9, BLG-4-1-10, BLG-4-1-11, BLG-4-1-12, BLG-4-1-13, BLG-4-1-14, BLG-4-1-15, BLG-4-1-16, BLG-4-1-17, BLG-4-2-2, BLG-4-2-3
Process Returns	BA-MA provides item status for all returned records	Accuracy, completeness and timeliness of status report	BLG-4-1-1, BLG-4-1-2, BLG-4-1-4, BLG-4-1-5, BLG-4-1-6, BLG-4-1-9, BLG-4-1-10, BLG-4-1-11, BLG-4-1-12, BLG-4-1-13, BLG-4-1-14, BLG-4-1-15, BLG-4-1-16, BLG-4-1-17, BLG-4-2-2, BLG-4-2-3

2.4 Data Sources

The data collected for the test are summarized in the table below.

Table 4-2: Data Sources for Usage Return Process Evaluation

Document	File Name	Location in Work Papers	Source
Bell Atlantic Escalation Process For CLECs, Billing Issues	http://www.bellatlantic.com/wholesale/html/res_escalate_clec.htm	BLG-4-A-I-1	Bell Atlantic
Bell Atlantic-North Usage Return Flow (Internal)	Return_Flow_North.pps	BLG-4-A-I-2	Bell Atlantic
Bell Atlantic-North Wholesale Technical Support Group Process (Internal)	Bell Atlantic-North Wholesale Technical Support Group Process1.doc	BLG-4-A-I-3	Bell Atlantic
Carrier-To-Carrier metrics definitions	Exhibit.doc	BLG-4-A-I-4	Bell Atlantic
Bell Atlantic Wholesale Markets: CLEC Handbook, Volume III, Chapter 9, March 2000 Release	http://www.bellatlantic.com/wholesale/html/handbooks/clec/volume_3/c3s9_2.htm	BLG-4-A-I-5	Bell Atlantic
DUF Distribution, Production and Returns Organizational Chart (Internal)	DUFOrgChart.pps	BLG-4-A-I-6	Bell Atlantic
Job/Task Descriptions: DUF Distribution, Production, Resends (Internal)	DUFResp.doc	BLG-4-A-I-7	Bell Atlantic
KPMG Consulting Corrected DUF Records	kpmg_credits.xls	BLG-4-A-I-8	KPMG Consulting
New York and New England – Wholesale Returned Usage Policy (Internal)	ba north duf return process.doc	BLG-4-A-I-9	Bell Atlantic

Document	File Name	Location in Work Papers	Source
Bell Atlantic Wholesale Markets: Resale Handbook, Volume III, Chapter 4, September 1999 Release	http://www.bellatlantic.com/wholesale/html/handbooks/resale/volume_3/r3s4_2.htm	BLG-4-A-I-10	Bell Atlantic
ATIS/OBF-EMI-016:Exchange Message Interface, Issue 16, Rev. 2, July 1999	Hard Copy	BLG-4-A-II-11	Bell Atlantic
DUF Records – Duplicate DUF Return (edited)	BADUFMA.U5114C.19991222_RETURN 2-25-00.RTF	BLG-4-A-III-1	Bell Atlantic/ KPMG Consulting
Interview Summary BLG4 & 5	Final_BLG4 and BLG5 Intsum_2-8-2000.doc	BLG-4-A-III-2	Bell Atlantic/ KPMG Consulting
BLG4 Document Request	BLG4Docreq.doc	BLG-4-A-II-1	KPMG Consulting
BLG4 Evaluation Criteria	BLG4EvalGd.doc	BLG-4-A-II-2	KPMG Consulting
CLEC Focus Group Results	Final_Focus Group Notes_1_26.doc	BLG-4-A-II-3	KPMG Consulting
CLEC Survey Results	Survey Summary.doc	BLG-4-A-II-4	KPMG Consulting
CLEC Survey Results	Condensed survey results.doc	BLG-4-A-II-5	KPMG Consulting
Interview Guides	BLG4Interview Gd.doc	BLG-4-A-II-6	KPMG Consulting

Document	File Name	Location in Work Papers	Source
New England Wholesale Return – KPMG Consulting Tracking Form	2-3-00 DUF Return.doc	BLG-4-A-II-7	KPMG Consulting
New England Wholesale Return – KPMG Consulting Tracking Form	2-22-00 DUF Return.doc	BLG-4-A-II-8	KPMG Consulting
KPMG Consulting Final Report - August 6, 1999 Bell Atlantic OSS Evaluation Project Version 2.0: VI: Billing Domain Results and Analysis Section	http://www.dps.state.ny.us/tel271.htm	Engagement File Work Papers	KPMG Consulting

2.4.1 Data Generation/Volumes

This test did not rely on data generation or volume testing.

2.5 Evaluation Methods

BLG4 consisted of a procedural evaluation and a transactional evaluation.

2.5.1 Procedural Method

The BLG4 procedural evaluation utilized process walkthroughs and structured interviews with BA-MA, a questionnaire sent to CLECs to verify the usage return process, and a review of BA-MA documentation. Data used in the evaluation of BA-MA's procedures were collected in the following ways:

1. Process Interviews – An interview was conducted with BA-MA staff responsible for the functional usage and usage return processes.
2. CLEC Focus Group – A focus group was conducted to collect real-life input from CLECs concerning operational issues related to the six Billing Domain evaluations. A total of six CLECs participated in the focus group.
3. CLEC Survey – A survey was used to collect real-life input from CLECs concerning operational issues related to the six Billing Domain evaluations. The survey was distributed to the CLEC community in December 1999. Survey responses were submitted by six CLECs.
4. Documentation Review - A review of all documents requested of BA-MA related to BLG4.

2.5.2 Transactional Method

The BLG4 transactional evaluation utilized the actual return of erred DUF records produced under the Massachusetts Functional Usage Evaluation test (BLG5). The test team followed BA-MA's published processes and procedures and monitored BA-MA's compliance with those procedures.

The data collected for the transaction evaluation included the following records:

1. Usage return initiated on February 3, 2000. Six records were returned for invalid call-to fields.
2. Usage return initiated on February 22, 2000. Sixteen records were returned for duplicate record types.

2.6 Analysis Methods

The Usage Return Process Evaluation included a checklist of evaluation criteria developed by the test manager during the initial phase of the Bell Atlantic-Massachusetts OSS Evaluation. These evaluation criteria, detailed in the *Master Test Plan*, provided the framework of norms, standards, and guidelines for the Usage Return Process Evaluation.

The data collected were analyzed employing the evaluation criteria referenced above.

3.0 Results Summary

This section identifies the evaluation criteria and test results.

3.1 Results & Analysis

The results of this test are presented in the tables below.

Table 4-3: BLG4 Procedural Evaluation Criteria and Results

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-4-1-1	The scope and objectives of the process are defined.	Satisfied	The scope and objectives are defined in the following documents: "New York and New England Wholesale Return Usage Policy," the BA-MA Resale Handbook, Sections 4.2.3 and 4.2.8, and the CLEC Handbook, Sections 9.2.3 and 9.2.8.

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-4-1-2	Responsibilities for carrying out the process are assigned.	Satisfied	The Bell Atlantic System Support (BASS) help desk documents the customer information, logs the problem and opens a trouble ticket (if necessary). This information is passed on to the Wholesale Technical Support Group (WTSG), who contacts and resolves the issue with the CLEC. Once the CLEC is satisfied with the investigation, the trouble ticket is closed by the BASS help desk. For additional information, please see the following documents: "New York and New England Wholesale Return Usage Policy," the BA-MA Resale Handbook, Sections 4.2.3 and 4.2.8, and the CLEC Handbook, Sections 9.2.3 and 9.2.8, "DUF Distribution, Production and Returns – Organizational Chart (Internal)" and "Job/Task Descriptions: DUF Distribution, Production, Resends (Internal)."
BLG-4-1-3	A complete (e.g., beginning-to-end) description of the process is defined.	Satisfied	A complete description of the process can be found the following documents: "New York and New England Wholesale Return Usage Policy," "Bell Atlantic North Usage Return Flow (Internal)," the BA-MA Resale Handbook, Sections 4.2.3 and 4.2.8, and the CLEC Handbook, Sections 9.2.3 and 9.2.8.
BLG-4-1-4	The procedure for processing usage returns is documented.	Satisfied	Specific roles and procedures used in usage returns are documented, and can be found in the following BA-MA internal document: "Bell Atlantic-North Wholesale Technical Support Group Process1.doc." This document lists the procedures that the BASS help desk and the WTSG follows for processing usage returns.

Test Cross-Reference	Evaluation Criteria	Result	Comments
	Performance Measurement and Reporting:		
BLG-4-1-5	Process performance measures are defined and measured.	Satisfied	The WTSG manager monitors the process by reviewing every trouble ticket weekly with the team. The WTSG manager ensures that the tickets are being answered and resolved in a timely manner. The internal document, "Bell Atlantic North Wholesale Technical Support Group Process1.doc" states "Depending on the nature of the problem the turnaround time varies. In general, Resends or Recreates are done within 24 to 48 hours."
BLG-4-1-6	Responsibilities for tracking performance are assigned.	Satisfied	The WTSG manager has responsibility for tracking performance. This is outlined in the "Bell Atlantic North Wholesale Technical Support Group Process1.doc" document.
	Process Elements:		
BLG-4-1-7	BA-MA assists CLECs with submitting usage return.	Satisfied	The WTSG will contact the customer to discuss the trouble ticket and determine the course of action for a usage return. The DUF Product Manager responsibilities include "working directly with customers to assist with DUF and resolve questions/issues." This information is detailed in the BA-MA document "Job/Task Descriptions: DUF Distribution, Production, Resends (Internal)." For additional information, please see the following documents: "New York and New England Wholesale Return Usage Policy," the BA-MA Resale Handbook, Sections 4.2.3 and 4.2.8, and the CLEC Handbook, Sections 9.2.3 and 9.2.8.

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-4-1-8	BA-MA Logs incoming requests and opens tickets.	Satisfied	The Bell Atlantic System Support Help Desk (BASS) is the initial point of contact for CLEC requests, and is responsible for opening a trouble ticket upon receipt of a CLEC inquiry for returned usage. These trouble tickets are logged into a Lotus Notes database. For additional information please see the following documents: "New York and New England Wholesale Return Usage Policy," the BA-MA Resale Handbook, Sections 4.2.3 and 4.2.8, and the CLEC Handbook, Sections 9.2.3 and 9.2.8.
BLG-4-1-9	BA-MA communicates investigation procedures.	Satisfied	The WTSG is responsible for communicating the investigation procedures used to resolve the DUF Return. Upon receipt of the return usage the WTSG will investigate the validity of the customer claim. The WTS group will notify the customer of their findings, and communicate the possible resolutions to the usage claim. This information is communicated in the following documents: BA-MA Resale Handbook, Sections 4.2.3 and 4.2.8, and the CLEC Handbook, Sections 9.2.3 and 9.2.8. Volume 3, Section 9.2.3, CLEC Usage Returns and Volume 3, Section 4.2.3, Reseller returns specify the possible resolution options.
BLG-4-1-10	BA-MA keeps CLECs apprised of the status of returns.	Satisfied	Status of the DUF return resolution is communicated by the WTSG. Additionally, the CLEC can call the BASS help desk for status of the DUF Return, referencing the trouble ticket number. Throughout this resolution process, the WTSG updates the trouble ticket with the appropriate information.

Test Cross-Reference	Evaluation Criteria	Result	Comments
			For additional information please see the following documents: "New York and New England Wholesale Return Usage Policy," the BA-MA Resale Handbook, Sections 4.2.3 and 4.2.8, and the CLEC Handbook, Sections 9.2.3 and 9.2.8.
BLG-4-1-11	BA-MA investigates usage claims using a process with built in quality control components.	Satisfied	The Bell Atlantic Billing Production Support (BPS) team and the WTSG work together to resolve CLEC usage return claims. The BPS group receives the trouble ticket prior to the WTSG. The BPS ensures that all the required information is on the ticket. The WTSG manager reviews every ticket weekly with the team to ensure that trouble tickets are being answered and resolved in a timely manner.
BLG-4-1-12	BA-MA responds to usage complaints.	Satisfied	The WTSG will respond to usage complaints by contacting the customer and requesting that the usage file be sent via Email to the individual assigned the ticket at the WTSG. "During the resolution, the WTSG will notify the CLEC of all actions and will confirm satisfaction of the resolution." Please see the following documents: "New York and New England Wholesale Return Usage Policy," the BA-MA Resale Handbook, Sections 4.2.3 and 4.2.8, and the CLEC Handbook, Sections 9.2.3 and 9.2.8.
BLG-4-1-13	BA-MA sends corrected records to CLECs when necessary.	Satisfied	If the usage return claim is determined valid, the WTSG will resolve and return the usage record to the CLEC. The CLEC determines the mode and medium to which the corrected DUF records are returned.

Test Cross-Reference	Evaluation Criteria	Result	Comments
			For additional information please see the following documents: "New York and New England Wholesale Return Usage Policy," the BA-MA Resale Handbook, Sections 4.2.3 and 4.2.8, and the CLEC Handbook, Sections 9.2.3 and 9.2.8.
BLG-4-1-14	BA-MA issues billing adjustments when necessary.	Satisfied	If the usage return claim is determined valid, the WTSG will resolve and coordinate with the TISOC to issue billing adjustments when necessary. For additional information please see the following documents: "Bell Atlantic North Wholesale Technical Support Group Process1.doc," "New York and New England Wholesale Return Usage Policy," the BA-MA Resale Handbook, Sections 4.2.3 and 4.2.8, and the CLEC Handbook, Sections 9.2.3 and 9.2.8.
BLG-4-1-15	BA-MA implements a system fix when necessary.	Satisfied	Problems requiring software changes are scheduled for the appropriate weekend releases. KPMG Consulting encountered a problem which required a system fix as a result of duplicate DUF records received instead of credit records. The system fix was implemented to correct duplicate records. See Test Cross-Reference BLG-4-2-3. For additional information please see the following documents: "New York and New England Wholesale Return Usage Policy," the BA-MA Resale Handbook, Sections 4.2.3 and 4.2.8, and the CLEC Handbook, Sections 9.2.3 and 9.2.8.
BLG-4-1-16	BA-MA closes the ticket if it is determined that no action is necessary.	Satisfied	If the WTSG determines the DUF Return is invalid, they will explain it to the CLEC and recommend that the trouble ticket be closed.

Test Cross-Reference	Evaluation Criteria	Result	Comments
			See Test Cross-Reference BLG-4-2-3 for transactional testing that resulted in a KPMG Consulting initiated DUF usage return which was determined to be invalid. The Bell Atlantic WTSG deemed no action necessary and the trouble ticket was closed. For additional information please see the following documents: "New York and New England Wholesale Return Usage Policy," the BA-MA Resale Handbook, Sections 4.2.3 and 4.2.8, and the CLEC Handbook, Sections 9.2.3 and 9.2.8.
BLG-4-1-17	BA-MA will close the ticket upon resolution.	Satisfied	The BASS is responsible for closing the trouble ticket. They can only do so if the CLEC is satisfied with the resolution (if applicable). The WTSG will notify the BASS to close the trouble ticket with the appropriate resolution noted. This information is documented in the "New York and New England Wholesale Return Usage Policy." If the CLEC disagrees with the DUF Return resolution and wants to escalate, the CLEC must follow the procedures outlined in http://www.bellatlantic.com/wholesale/html/res_escalate_clec.htm For additional information please see the following documents: the BA-MA Resale Handbook, Sections 4.2.3 and 4.2.8, and the CLEC Handbook, Sections 9.2.3 and 9.2.8.

Table 4-4: BLG4 Transactional Evaluation Criteria and Results

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-4-2-1	BA-MA assisted with returning usage. The returned usage was accepted by BA-MA.	Satisfied	When procedures outlined in BA-MA's usage return policy were followed, the BASS, WTSG and NY Billing Development organizations responded appropriately. Six records were returned on February 3, 2000 for invalid call-to fields. The BASS and the NY Billing Development assisted in the resolution. Eight duplicate records were returned on February 25, 2000. The BASS Group and the NY Billing Development Group assisted in the resolution.
BLG-4-2-2	BA-MA followed established procedures in investigating and resolving the claim.	Satisfied	In the two instances described above, BA-MA followed the established procedures outlined in the "New York and New England Wholesale Return Usage Policy," the BA-MA Resale Handbook, Sections 4.2.3 and 4.2.8, and the CLEC Handbook, Sections 9.2.3 and 9.2.8.
BLG-4-2-3	BA-MA's resolution was appropriate.	Satisfied	In the two instances described above, BA-MA's resolution was appropriate. BA-MA's investigation determined that valid usage was sent correctly to KPMG Consulting. The returned records were Resale usage that did not require the call-to field to be populated; therefore, no action was necessary and trouble ticket #7195 was subsequently closed. The duplicate records in question were determined to be credit records. A system fix was initiated on March 3, 2000 and the records were corrected on March 24, 2000. BA-MA determined that only seven of the eight records were duplicates and needed correction. KPMG Consulting reviewed the records and agreed with the resolution. Trouble ticket #8764 was closed on April 3, 2000.

E. Test Results: Functional Usage Evaluation (BLG5)

1.0 Description

The Functional Usage Evaluation (BLG5) examined the ability of Bell Atlantic-Massachusetts (BA-MA) to completely and accurately capture customer telephone calls (usage) as data records and forward these records to Competitive Local Exchange Carriers (CLECs). BLG5 also assessed BA-MA's ability to provide these data records to CLECs on the Daily Usage Feed (DUF) file according to the defined schedule.

BLG5 required KPMG Consulting to act as a CLEC providing telecommunications services to end user customers. The BLG5 test team (test team) performed the following steps in order to conduct the BLG5 evaluation:

- Generate telephone usage,
- Validate the completeness and accuracy of the data records prepared by BA-MA from the telephone usage, and
- Assess the timeliness of BA-MA's delivery of the data records to a CLEC.

2.0 Methodology

This section summarizes the test methodology.

2.1 Business Process Description

Records appearing in the DUF come from three sources. First, when a telephone call is completed on a line with a BA-MA owned port, the switch records call information. Second, if a CLEC purchases an unbundled port, the switch will generate IXC access records for both InterLATA[109] originating and InterLATA terminating calls. Third, "in-collect" records may be sent from other carriers via the Centralized Message Distribution System (CMDS) to CLECs that BA-MA has agreed to host. BA-MA will receive these records on the CLECs' behalf and pass these records to the CLECs. All three record types are transmitted to BA-MA's data center for processing. The data are accumulated by BA-MA's message processing system, which is called the Message Customer Record Information System (MCRIS). Non-billable records are discarded,[110] and all remaining usage is accumulated into several very large files — one for

[109] InterLATA calls are calls where the originating and terminating exchanges reside in different Local Access Transport Areas. These are commonly known as, "long-distance calls."

[110] Switches will record both inbound and outbound calls. The Daily Usage Feed consists of outbound local usage, IntraLATA toll usage, Bell Atlantic operator-assisted calls and IXC originating and terminating access records. Non-billable records generated by the switch include incoming local calls, non-measured outgoing local usage, and operator inquiries that may or may not be charged at the operator's discretion. This list is non-exhaustive.

resale, one for UNE-P and one for meet point billing.[111] These files are then sorted by a variety of fields and then split into one file per state and Operating Company Number (OCN). These files are the DUFs. Resellers, CLECs that purchase Bell Atlantic Resale products, receive one file per day that includes all local and local toll-originating calls. Unbundlers, CLECs that purchase Bell Atlantic unbundled network elements (UNEs), receive two files per day from BA-MA. The first file will contain all local and local toll-originating calls. The second file contains IXC originating and terminating access records.

2.2 Scenarios

The Procedural evaluation did not utilize test scenarios.

The Transactional evaluation utilized scenarios to simulate actual customer situations. Scenarios chosen for BLG5 covered various situations (e.g., migrations from BA-MA Retail to a CLEC, Winbacks and CLEC to CLEC migrations) as well as line features (e.g., call waiting, call forwarding) in four rate zones defined.

2.3 Test Targets & Measures

The table below captures the scope of BLG5 as described in the Master Test Plan. BLG5 targets completeness, accuracy and timeliness of the Daily Usage Feed. Processes, sub-processes, evaluation measures, and associated test cross-reference numbers are summarized in the following table. The last column, "Test Cross-Reference," indicates where the particular measures are addressed in Section 3.1 "Results & Analysis."

Table 5-1: Test Target Cross-Reference

Process	Sub-Process	Evaluation Measure	Evaluation Technique	Test Cross-Reference
Daily Usage Feed	Balancing and reconciliation of usage feed	Completeness of balancing and reconciliation procedures	Qualitative Inspections	BLG-5-1-1 through BLG-5-1-8
Daily Usage Feed	Route usage	Controllability of usage	Qualitative Inspections	BLG-5-1-1 through BLG-5-1-4 BLG-5-1-9 through BLG-5-1-14

[111] Since the test manager's CLECs are not facilities-based carriers, meet point billing was not evaluated. Furthermore, a survey of participating CLECs did not reveal substantial concerns about the accuracy or timeliness of the meet point billing daily usage feed.

Process	Sub-Process	Evaluation Measure	Evaluation Technique	Test Cross-Reference
Transmit DUF	Send via Direct: Connect	Completeness, consistency and timeliness of the process	Qualitative Inspections	BLG-5-2-1 through BLG-5-2-14
Maintain Usage History	Create usage backup	Reliability of repeatable process	Qualitative Inspections	BLG-5-1-15 through BLG-5-1-16
Maintain Usage History	Request backup data	Availability of data	Qualitative Inspection	BLG-5-3-1 through BLG-5-3-3
Status Tracking and Reporting	Track valid usage	Completeness and accuracy of data Timeliness of DUF files and DUF records	Quantitative Inspections	BLG-5-4-1 through BLG-5-4-4, BLG-5-4-5
Status Tracking and Reporting	Account for no usage	Completeness of data	Quantitative Inspections	BLG-5-3-1, BLG-5-3-2

2.4 Data Sources

The data collected for the procedural and transactional evaluations are summarized in the table below.

The data collection for the procedural test relied on the Interview conducted in Boston, Massachusetts on February 8, 2000 with subject matter experts from BA-MA Message Processing and BA-MA Wholesale Billing.

Table 5-2: Data Sources for Functional Usage Evaluation

Document	File Name	Location in Work Papers	Source
Carrier-to-Carrier metrics definitions	ExhibitI.doc	BLG-5-A-I-1	Bell Atlantic
Bell Atlantic Wholesale Markets: Resale Handbook, Volume II, Section 2, March 2000 Release; Section 2.5: Connectivity Test	http://www.bell-atl.com/wholesale/html/handbooks/clec_resale/volume_2/cr2s2_5.htm	BLG-5-A-I-2	Bell Atlantic
Wholesale Handbook, Volume III, Section 10.2 (End User Usage Data)	http://www.bell-atl.com/wholesale/html/handbooks/clec/volume_3/c3s10_2.htm	BLG-5-A-I-3	Bell Atlantic

Document	File Name	Location in Work Papers	Source
Bell Atlantic-Massachusetts Processing System Overview	Bell Atlantic-Massachusetts Processing System Overview (Hard Copy Only)	BLG-5-A-I-4	Bell Atlantic
ATIS/OBF-EMI-016:Exchange Message Interface, Issue 16 Rev. 2, July 1999 Exchange Message Interface (EMI) Manual	Hard Copy Only. Available from Ordering and Billing ForumExchange Message Interface (EMI) Manual, Issue 16 Rev. 2, July 1999	BLG-5-A-I-5	Bell Atlantic
Bell Atlantic Wholesale Markets: Resale Handbook, Volume III, Section 4, September 1999 Release; Section 4.2	http://www.bellatlantic.com/wholesale/html/handbooks/resale/volume_3/r3s4_2.htm	BLG-5-A-I-6	Bell Atlantic
Bell Atlantic Wholesale Markets: CLEC Handbook, Volume III, Section 9, March 2000 Release; Section 9.2 (End User Usage Data)	http://www.bellatlantic.com/wholesale/html/handbooks/clec/volume_3/c3s9_2.htm	BLG-5-A-I-7	Bell Atlantic
DUF Files	DUFFile Diskette	BLG-5-A-I-8	Bell Atlantic
CLEC Survey Results	Survey Summary.doc	BLG-5-A-II-1	KPMG Consulting
CLEC Survey Results	Condensed survey results.doc	BLG-5-A-II-2	KPMG Consulting
CLEC Focus Group Results	Final_Focus Group Notes_1_26.doc	BLG-5-A-II-3	KPMG Consulting
KPMG Consulting Final Report - August 6, 1999 Bell Atlantic OSS Evaluation Project Version 2.0: VI: Billing Domain Results and Analysis Section New York OSS Final Report: Test Results – Functional Usage Evaluation (BLG6)	http://www.dps.state.ny.us/tel271.htm Hard Copy	BLG-5-A-II-4	KPMG Consulting
DUF Analysis Worksheet	BLG5_DUF_Analysis.xls	BLG-5-A-II-5	KPMG Consulting

Document	File Name	Location in Work Papers	Source
Interview Summary BLG4 & 5	Final BLG4 & 5 Interview summary 2-8-2000.doc	BLG-5-A-III-1	Bell Atlantic/ KPMG Consulting

2.4.1 Data Generation/Volumes

The KPMG Consulting test team placed and logged calls from within and outside the BA-MA calling region. A variety of call types, including local, toll and other, were placed. "Local" calls are calls made to destinations within the local calling area, and are charged by standard measured service or a monthly flat fee. "Toll" calls are calls made to destinations outside of the local calling region but within the same LATA. These calls carry an additional charge. "Other" calls consist of operator-assisted calls, directory assistance, information provider, special service calls and calls carried by interexchange carriers (IXCs), including direct dial long distance, casual calls (10-10-###), and operator assisted (double-zero) calls. This evaluation did not rely on volume testing.

2.5 Evaluation Methods

For the Procedural Evaluation, the data collected from interviews and walkthroughs with BA-MA subject matter experts (SMEs) was analyzed in order to evaluate the criteria outlined for this test.

The BLG5 transactional evaluation was conducted using testers throughout the Commonwealth of Massachusetts who made scripted telephone calls while acting as CLEC business and residential customers. The test team analyzed the BA-MA call records received for completeness, accuracy and timeliness.

The usage records received by the test team were examined. The test team verified that records appearing on the DUF were correct. DUF records were also analyzed for accuracy based on industry standards documented in the Exchange Message Interface Manual (EMI).[112]

2.6 Analysis Methods

The Functional Usage Evaluation included a checklist of evaluation criteria developed by the test manager during the initial phase of the Bell Atlantic-Massachusetts OSS Evaluation. These evaluation criteria, detailed in the *Master Test Plan*, provided the framework of norms, standards, and guidelines for the Functional Usage Evaluation.

The data collected were analyzed employing the evaluation criteria referenced above.

[112] Exchange Message Interface (EMI), Industry Support Interface Issue 16, Rev. 2, July 1999.

3.0 Results Summary

This section identifies the evaluation criteria and test results.

3.1 Results & Analysis

The results of this test are presented in the tables below.

Table 5-3: BLG5 Evaluation Criteria and Results: Daily Usage Feed and Maintain Usage History

Test Cross-Reference	Evaluation Criteria	Result	Comments
	Procedural Consistency and Integrity:		
BLG-5-1-1	The scope and objectives of the process are defined.	Satisfied	The scope and objectives of the process for creating the DUF is described in the Message Processing System Overview – Massachusetts document. Balancing procedures are part of message processing, and their scope and objectives are depicted in a diagram in the documentation.
BLG-5-1-2	Responsibilities for carrying out the process are assigned.	Satisfied	The day-to-day activities of producing DUF are assigned to the Operations Group. The applications within the Message Processing System are owned by an organization, totally dedicated to MCRIS (Message Customer Record Information System). The AMA (Automatic Message Accounting) manager is responsible for ensuring that data recorded at the switch is delivered to the message processing system.
BLG-5-1-3	A complete (e.g., beginning-to-end) description of the DUF creation process exists.	Satisfied	A complete description of the DUF creation process is defined in the Message Processing System Overview – Massachusetts document. This document provides a complete end-to-end pictorial of the DUF creation process.
BLG-5-1-4	The DUF balancing process is documented.	Satisfied	The balancing process is documented in BA-MA internal technical documents.

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-5-1-5	Process performance measures are defined and employed.	Satisfied	Balancing and reconciliation measures are used to manage performance of the DUF process. BA-MA has a computer software application, UNITECH, designed to monitor performance using balancing and reconciliation rules. If a defined level is not met, the system issues a warning and may shut down processing until the problem is corrected.
BLG-5-1-6	Responsibilities for tracking performance are assigned.	Satisfied	The Operations group is responsible for reviewing results from system job executions. This includes checking for warnings or errors. Functional experts are responsible for updating rules for tracking performance as warranted. Application owners are responsible for ensuring that the systems' applications are functioning correctly.
BLG-5-1-7	Control points enable the identification of out-of-balances (conditions where the number of input messages is inconsistent with the number of output messages).	Satisfied	Out-of-balance conditions are identified by BA-MA using multiple counters witin UNITECH. First, counters tally the number of records, total dollar amounts and call quantities to check the input/output counts of a program. If these counts are out-of-balance, the system will issue an error and stop processing. Second, an audit system operating in a second environment compiles statistics and compares application results against historical data to ensure accuracy. If the number of calls or revenue amount is inconsistent with historical averages, the system will stop and issue an error or warning. The application owner investigates.
BLG-5-1-8	Procedures exist for investigating and correcting out-of-balance conditions.	Satisfied	If an out-of-balance condition occurs, BA-MA's message processing sytstem, MCRIS, will either stop automatically or issue warnings depending on the severity of the error. When this happens, the on-call technician examines the problem and contacts the application owner. The owner responds appropriately.

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-5-1-9	BA-MA tracks CLEC customers' usage from BA-MA's originating switch through message processing and onto the DUF.	Satisfied	The Message Processing System Overview – Massachusetts diagrams BA-MA's usage tracking from the originating switch through the message processing system (MCRIS) and onto the DUF. BA-MA tracks usage by keeping counts of records, total dollar amounts and call quantities. BA-MA verifies the input/output counts of all programs in the MCRIS system.
BLG-5-1-10	Procedures for DUF creation include the detection of usage gaps and duplicates.	Satisfied	The message processing system checks for usage gaps and duplicates by checking the sequence numbers of headers and trailers for duplicates. An audit system operating in a separate environment compiles statistics and compares application results agains historical data to ensure accuracy.
BLG-5-1-11	BA-MA interfaces with CMDS (Centralized Message Distribution System).	Satisfied	BA-MA has a CMDS interface for exchange of messages with other companies. This interface is described in the Message Processing System Overview diagram for Massachusetts.
BLG-5-1-12	An error and exception process exists for handling switch data without a valid guide rule.	Satisfied	An error and exception process exists. Switch data is recycled when no valid guide rule is found (when messages cannot be associated with an account). After 72 hours, usage that is not guided will err and a formal investigation process commences. Wholesale and retail investigations are not distinguished.
BLG-5-1-13	The format for the DUF meets Exchange Message Interface (EMI) industry standards.	Satisfied	Documentation reviews reveal the EMI standard has been adopted for all DUF records.
BLG-5-1-14	The Guide file (account information) is created frequently.	Satisfied	The usage guide is updated daily as part of BA-MA's message processing system (MCRIS).

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-5-1-15	Backup files created are stored securely for the specified number of days listed in BA-MA's regulatory requirements.	Satisfied	The Storage Management System (SMS), an internal file management system, is used to control files. Only supervisors can delete files prior to the SMS control date. The files used to re-create DUFs are kept by BA-MA for at least 45 days as specified in the Bell Atlantic Resale Handbook.
BLG-5-1-16	Disaster recovery procedures exist.	Satisfied	Major intermediary files are backed up to allow the process to restart from many places in the process. These backup procedures enable BA-MA to recover lost data or replace corrupted data.

Table 5-4: BLG5 Evaluation Criteria and Results: Transmit DUF

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-5-2-1	BA-MA has a documented interface development methodology that addresses design, testing and implementation of usage data transmission.	Satisfied	The methodology for establishing DUF transmission is outlined in the Resale/CLEC Handbook in the billing chapters, subchapter Operations. Bell Atlantic account managers initiate discussions about connectivity with the CLEC. BA-MA has defined a process for interface testing and implementation with regards to network data mover (NDM) transmissions. Network data mover is a record transmission utility used by BA-MA.
BLG-5-2-2	Interface development methodology defines how quality is to be assured.	Satisfied	Interface development quality is assured through the BA-MA testing process. A CLEC must process a test file in order to become certified by BA-MA for production. BA-MA provides a resource to assist CLECs with establishing connectivity to ensure quality.

Test Cross-Reference	Evaluation Criteria	Result	Comments
	Interface Specifications:		
BLG-5-2-3	Interface specifications define security (security measures are built into transport mechanisms).	Satisfied	BA-MA has defined procedures for maintaining secure environments. There are two types of security procedures: *Network Security* Dial-up connection requires password and phone number verification. NDM transmissions over a leased line are secure, and may only be accessed at the CLEC site with proper Resource Access Control Facility (RACF) authorization. *Physical Security* Cartridges are sent using Airborne Express Package Delivery Service. Packages are signed upon receipt by CLECs.
BLG-5-2-4	Interface specifications define applicable business rules.	Satisfied	Business rules are documented in the CLEC Handbooks (Wholesale Handbook Volume II, Section 2.4 Bell Atlantic Support). In addition, BA-MA Account Management provides support to CLECs. Communication with the Account Manager initiates the process to establish an interface. The Account Manager and members of BA-MA technical support are available to explain the rules, should questions arise.
BLG-5-2-5	Interface specifications define data formats and definitions (e.g., variable definition and context of usage).	Satisfied	The data files are created according to EMI industry guidelines published by the Ordering and Billing Forum (OBF). This is described in the BA-MA CLEC Handbook.
BLG-5-2-6	Interface specifications define transmission protocols (e.g., hardware/software/ network requirements).	Satisfied	The transmission protocols are defined. NDM (Network Data Mover) is the protocol used for electronic transmission of DUFs. Complete specifications for NDM are defined in the CLEC Handbooks. Refer to the Bell Atlantic–Massachusetts Resale Handbook, Volume II, Section 2.5.

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-5-2-7	Responsibilities and procedures for developing, updating and distributing interface specification document(s) are defined.	Satisfied	The responsibility for reviewing procedures relating to sending DUFs belongs to Bell Atlantic subject matter experts. These experts include the member of technical support in charge of transporting data, or the wholesale billing manager.
BLG-5-2-8	Procedures for updating interface specifications are integrated with formal change management procedures involving customers.	Satisfied	The procedures for updating the handbooks are integrated with formal change management. Handbooks are periodically reviewed and reissued in accordance with the formal change management procedures. This includes distribution of changes via industry mailings. These procedures are found in the CLEC Handbook, Volume III, Section 1.2. Data guidelines are updated and published by the national Ordering and Billing Forum (OBF– http://www.atis.com). BA-MA publishes all additional and local information in the CLEC handbooks.
	Interface Testing:		
BLG-5-2-9	Functioning test environments are made available to customers for billing usage interface.	Satisfied	A test environment is made available to customers to test the billing usage interface. For Connect:Direct (the NDM interface with BA-MA) testing, the CLEC/Reseller is provided with the necessary information to connect to the Bell Atlantic application. This includes the remote login information for the Connect:Direct connection. Test transmissions are exchanged and each party verbally notifies the other via telephone of the results of the connection. Refer to the Bell Atlantic Resale Handbook, Volume II, Section 2.5 Connectivity Testing.

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-5-2-10	On-call customer support for interface testing is provided.	Satisfied	Testing support is provided. BA-MA and the CLEC work together to accomplish testing activities. BA-MA assigns resources to each step of the process. The assignment of resources is described in the CLEC and Resale Handbooks. Refer to the Bell Atlantic Resale Handbook, Volume II, Section 2.5 Connectivity Testing.
BLG-5-2-11	Carriers are provided with documented specifications for active test environments.	Satisfied	BA-MA provides detailed information for testing. Bell Atlantic offers a Connectivity Test to CLECs/Resellers. The Connectivity Test is performed to verify that Connect:Direct between the CLEC/Reseller and Bell Atlantic is in place and reliable. Specific connectivity information is available in the Bell Atlantic Resale Handbook, Volume II, Section 2.5 Connectivity Testing.
	Interface Support:		
BLG-5-2-12	Production performance is monitored.	Satisfied	Performance is monitored in the production environment. The Operations group reviews return codes from the programs that create and execute transmission jobs. BA-MA also monitors the output queue for CLECs with dial-up connectivity to ensure timely downloading of DUFs.
BLG-5-2-13	Procedures for addressing errors and exceptions are defined.	Satisfied	Procedures are defined in the CLEC and Resale Handbooks. Refer to the Bell Atlantic Resale Handbook, Volume III, Section 4.2 Customer Usage Data. NDM is a self-correcting, self-auditing software package. If a link is interrupted in the middle of a transmission, the transmission will be resent after the link is fixed. If a direct transmission linked is interrupted for several days, BA-MA has procedures in place to create cartridge tapes for the CLEC.

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-5-2-14	On-call production support is provided for production interfaces.	Satisfied	Technical support is provided by many groups within BA-MA. The Communications Trouble and Analysis Center (CTAC) handles trouble calls. The Bell Atlantic Resale Handbook, Volume III, Section 4.2 Customer Usage Data, lists a specific contact number to call with questions 24 hours a day, seven days a week.
			The Wholesale Technical Support (WTS) group addresses issues surrounding cartridge tapes and data. Contact numbers are listed in the Bell Atlantic Resale Handbook, Volume II, Section 4.6.4 Usage/Billing Problem Identification and Notification.

Table 5-5: BLG5 Evaluation Criteria and Results: Request Backup Data

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-5-3-1	BA-MA accepts requests from CLECS to resend historical DUF Files.	Satisfied	BA-MA will accept requests from CLECs for historical data via the Bell Atlantic System Support Help Desk. BA-MA stated that, effective November 11, 1999, the Bell Atlantic System Support (BASS) Help Desk tracks requests for backup data. Refer to the Bell Atlantic Wholesale Handbook, Volume III, Section 10.2 End-user Usage Data.
BLG-5-3-2	BA-MA fills CLEC requests for files sent no more than 45 days prior.	Satisfied	BA-MA's documented process states that when a CLEC requests data files within 45 days of original transmission, the request will be filled. Refer to the Bell Atlantic Resale Handbook, Volume III, Section 4.2.7.
BLG-5-3-3	BA-MA notifies CLECs requesting files sent more than 45 days prior if the request cannot be fulfilled.	Satisfied	BA-MA's documented process states that data files are kept for 45 days after being sent to the CLEC. BA-MA is not obligated to fill a request from the CLEC for data that is older than 45 days. Refer to the Bell Atlantic Resale Handbook, Volume III, Section 4.2.7.

Table 5-6: BLG5 Evaluation Criteria and Results: Status Tracking and Reporting (Completeness, Accuracy, and Timeliness of Data That Appears on the DUF)

Test Cross-Reference	Evaluation Criteria	Result	Comments
	Usage Completeness and Accuracy:		
BLG-5-4-1	Calls made from Retail, Resale and UNE-P lines appear as appropriate. The data appearing in the DUF is complete.	Satisfied	Test calls expected to generate a DUF record matched the actual DUF record 95% of the time. Of 346 test calls expected to generate usage, a usage record was generated for 330. Detailed information can be found in Table 5-8, BLG5, Expected DUF Accuracy Analysis – Transaction Test.
BLG-5-4-2	Calls made from Retail, Resale or UNE-P lines not expected to generate usage do not generate any usage.	Satisfied	Test calls not expected to generate a DUF did not generate a DUF record 99% of the time. Of 730 test calls not expected to generate usage, there was no usage record generated for 723. Detailed information can be found in Table 5-9, BLG5, Unexpected DUF Accuracy Analysis – Transaction Test.
BLG-5-4-3	Data appearing in the DUF is accurate.	Satisfied	Initial testing revealed problems, including missing, incomplete and incorrect DUF records. Bell Atlantic corrected these problems with a system fix initiated on March 3, 2000. A subsequent test revealed 100% of DUF records were accurate with regard to format and content.
BLG-5-4-4	Pack Header and Trailer records have an accurate count of the DUF records contained in the pack.	Satisfied	Header and Trailer records in the DUF files received contained a correct count of the number of records found within the pack 100% of the time. Detailed information appears in Table 5-10, Header and Trailer Records Analysis – Transaction Test.

Test Cross-Reference	Evaluation Criteria	Result	Comments
	Usage Timeliness:		
BLG-5-4-5	Data is transmitted in a timely fashion according to Bell Atlantic documentation.	Satisfied	During initial testing, DUF records were not received in a timely based on the Carrier-to-Carrier standard of 95% within four business days. BA-MA DUF delays resulting from problems with Network Data Mover (NDM) were resolved for the DUF test which commenced on April 4, 2000.
			Subsequent testing revealed the problem had been corrected. Of the 386 DUF records received by KPMG Consulting from BA-MA, 382, or 99%, were received in the prescribed timeframe. See Table 5-11, DUF Timeliness Analysis – Transaction Test.

3.2 Additional Information

The tables below show details of the DUF Transaction Test conducted April 4, 2000 through April 6, 2000.

Table 5-7: BLG5 Tester Log Entry Breakdown: Transaction Test

Category	Count
Total number of tester log entries **expected** to generate a DUF record	346
Total number of tester log entries **not expected** to generate a DUF record	730
Total number of tester log entries	1076

Table 5-8: BLG5 Expected DUF Accuracy Analysis: Transaction Test

Log Entries Expected to Generate Usage	Count	Percentage of Total
Total number of tester log entries ***expected*** to generate a DUF record and ***did match*** a DUF record transmitted by BA-MA	330	95.4%
Total number of tester log entries ***expected*** to generate a DUF record and ***did not match*** any DUF records transmitted by BA-MA	16	4.6%
Total	**346**	**100%**

Table 5-9: BLG5 Unexpected DUF Accuracy Analysis: Transaction Test

Log Entries Not Expected to Generate Usage	Count	Percentage of Total
Total number of tester log entries ***not expected*** to generate a DUF record and ***did match*** a DUF record transmitted by BA-MA	7	1%
Total number of tester log entries ***not expected*** to generate a DUF record and ***did not match*** any DUF records transmitted by BA-MA	723	99%
Total	**730**	**100%**

DUF Header and Trailer records contain the number of records transmitted within each pack of records. The following table detail all of the files received by KPMG Consulting for the Transaction Test and the number of records received within each pack of records. Only non-empty files are listed below.

Table 5-10: BLG5 Header/Trailer Records Analysis: Transaction Test

File Name	Record Count	Actual Record Count
BADUFMA.R5115C.20000406.65657060400002a000	10	10
BADUFMA.R5115C.20000407.34757070400002a000	30	30
BADUFMA.R5115C.20000410.13258001400002a000	21	21
BADUFMA.U5114A.20000406.55847060400002a000	29	29
BADUFMA.U5114A.20000407.83947070400002a000	49	49
BADUFMA.U5114A.20000410.44057001400002a000	67	67
BADUFMA.U5114C.20000406.35757060400002a000	23	23
BADUFMA.U5114C.20000407.93857070400002a000	47	47
BADUFMA.U5114C.20000410.35358001400002a000	57	57
BADUFMA.R5115C.20000420.32510102400002a000	2	2
BADUFMA.R5115C.20000419.12808191400002a000	1	1
BADUFMA.R5115C.20000411.75540051400002a000	16	16
BADUFMA.R5115C.20000421.44518012400002a000	1	1
BADUFMA.U5114A.20000411.25540051400002a000	16	16
BADUFMA.U5114C.20000411.20640051400002a000	17	17
Totals	**386**	**386**

Timeliness is measured as the number of business days from the creation of the message to the date that the usage data is made available to the CLEC on the Daily Usage Feed (DUF). The day the usage is generated (i.e., the date of the call) is excluded when measuring timeliness. For example, if a telephone call was placed on January 1st, 2000. BA-MA processes the usage and sends it to the CLEC on January 4th, 2000. This call would be considered two days old (4 – 1 = 3 days – 1 weekend day = 2 business days). Timeliness is measured in percentage of usage records transmitted within 3, 4, 5, and 8 business days according to the Carrier-to-Carrier Guidelines Performance Standards and Reports.

Table 5-11: BLG5 DUF Timeliness Analysis: Transaction Test

Timeliness Metric, as stated in the CLEC-to-CLEC Agreement	Cumulative Record Count	Cumulative Percentage
DUF Records received within 3 days	382	98.96%
DUF Records received within 4 days	0	0.00%
DUF Records received within 5 days	0	0.00%
DUF Records received within 8 days	0	0.00%
DUF Records received after 8 days	4	1.04%
Total Number of Records	**386**	**100.00%**

F. Test Results: Functional Bill Cycle Evaluation (BLG6)

1.0 Description

The Functional Bill Cycle Evaluation (BLG6) assessed Bell Atlantic-Massachusetts' (BA-MA's) ability to provide complete, accurate, and timely bills to Competitive Local Exchange Carriers (CLECs). The BLG6 test consisted of two components: a bill validation component and a process evaluation component.

The bill validation component of this test examined the content and the timeliness of delivery of CLEC bills received by KPMG Consulting in the role of a CLEC. The evaluation examined Bell Atlantic's billing of usage charges, monthly-recurring and non-recurring charges for Unbundled Network Elements and Resold services.

In the process evaluation component, KPMG Consulting examined Bell Atlantic's internal procedures associated with the production and distribution of invoices. The objective of this evaluation was to examine the processes by which invoices are produced and distributed to determine whether Bell Atlantic's internal procedures are sufficiently complete to ensure timely and correct invoicing.

KPMG Consulting evaluated bills generated by BA-MA's Customer Records Information System (CRIS) and Carrier Access Billing System (CABS) systems.

2.0 Methodology

This section summarizes the test methodology.

2.1 Business Process Description

Competitive Local Exchange Carriers (CLECs) can purchase various phone services through BA-MA for the purpose of reselling these services to CLEC customers. CLECs may resell complete packages of service (referred to in this report as Resale), or purchase a selection of unbundled network elements (referred to in this report as UNE). Bell Atlantic prepares many types of CLEC bills that are distributed over the course of a monthly billing period. Each bill covers a specific set of products and services. Bills are produced by two primary billing systems, CRIS and CABS. The CABS billing system principally produces CLEC bills for unbundled services. The CRIS billing system principally produces bills for non-UNE services.

Bell Atlantic's CLEC bills are structured in a hierarchical manner. At the top of the hierarchy is the Master or Summary Account. Charges for multiple sub-accounts (individual customers or end users) are aggregated under the Summary Account. In addition, each sub-account has a billing telephone number (BTN) to which all charges are applied, though the sub-account may have multiple telephone numbers. Bell Atlantic assigns each CLEC an Alternate Exchange Carrier Name (AECN) - for UNE products or Reseller Identification (RSID) - for resale to which

each summary bill is rolled-up for the purpose of generating aggregate bills. Bills are then generated according to their appropriate bill cycle. In New England, CLECs can choose to receive bills for UNE products on one of several bill periods offered by Bell Atlantic. On the other hand, CLECs can select from one of two bill periods, the 15th and 30th of each month, for its resale invoices.

2.2 Scenarios

The procedural evaluation did not include the use of scenarios. The transactional evaluation did include scenarios. To generate a selection of charges that would appear on the CLEC bill, test cases used in BLG6 covered a wide spectrum of scenarios for Resale, UNE and UNE-P products. Specifically, these included:

- Test cases for "as is/conversion" customers some of which have supplements
- Test cases for disconnects
- Test cases for changes to other items (e.g., features)
- Test cases for suspends
- Test cases based on erred conditions from upstream systems, as required (validating orders based on actual provisioned results)
- Test cases for new customer installation

Migration situations tested for customer's transition billing included:

- BA-MA to CLEC
- CLEC to BA-MA
- CLEC to CLEC

KPMG Consulting evaluated several types of bill media, including paper copies of bills, CD ROMs, Billing Output Specifications Bill Data Tape (BOS BDT), and magnetic tape. The majority of the bills evaluated consisted of paper copies and BOS-BDT formatted bills sent via Network Data Mover (NDM). A selection of CD ROMs and magnetic tapes were also reviewed to verify that these media reflected the same billing data as their paper images.

2.3 Test Targets & Measures

The test target was the completeness and accuracy of the CRIS/CABS carrier billing and the processes that support timely and accurate production and distribution of the carrier bills in accordance with Bell Atlantic's published specifications. Processes, sub-processes, evaluation measures, and associated test cross-reference numbers are summarized in the following table. The last column, "Test Cross-Reference," indicates where the particular measures are addressed in Section 3.1 "Results & Analysis."

Table 6-1: Test Target Cross-Reference

Process	Sub-Process	Evaluation Measure	Evaluation Technique	Test Cross-Reference
Maintain Bill Balance	Carry balance forward	Accuracy of bill balance	Inspections	BLG-6-1-1, BLG-6-1-2, BLG-6-1-10, BLG-6-1-11, BLG-6-4-6
Verify Billing Account	Verify Billing Accounts Selected	Completeness and accuracy of extraction	Inspections, report review	BLG-6-1-3, BLG-6-4-5
Review Bills	Verify normal recurring charges	Completeness and accuracy of data	Inspections	BLG-6-1-4, BLG-6-4-7
Review Bills	Verify one-time charges	Completeness and accuracy of data	Inspections	BLG-6-1-4, BLG-6-4-8
Review Bills	Verify prorated recurring charges	Completeness and accuracy of data	Inspections	BLG-6-1-7, BLG-6-4-9
Review Bills	Verify usage charges	Completeness and accuracy of data	Inspections	BLG-6-1-8, BLG-6-4-11
Review Bills	Verify discounts	Completeness and accuracy of data	Inspections	BLG-6-1-5, BLG-6-4-7, BLG-6-4-8, BLG-6-4-11
Review Bills	Verify adjustments (debits and credits)	Completeness and accuracy of data	Inspections	BLG-6-1-6
Review Bills	Verify late charges	Completeness and accuracy of data	Inspections	BLG-6-1-9, BLG-6-4-13
Review Bills	Verify bill format	Completeness and accuracy of format	Inspections	BLG-6-1-11, BLG-6-4-1, BLG-6-4-2, BLG-6-4-17
Balance Cycle	Define balancing and reconciliation procedures	Availability of balancing and reconciliation procedures	Inspections	BLG-6-1-1, BLG-6-1-2
Balance Cycle	Produce Control Reports	Completeness and accuracy in generation of control elements	Report review	BLG-6-1-1, BLG-6-1-2
Balance Cycle	Release Cycle	Compliance to balancing and reconciliation procedures	Inspections	BLG-6-1-1, BLG-6-1-2

Process	Sub-Process	Evaluation Measure	Evaluation Technique	Test Cross-Reference
Deliver Bill	Deliver Bill Media	Timeliness of media arrival	Inspections, logging	BLG-6-2-1, BLG-6-2-2, BLG-6-2-3, BLG-6-2-4, BLG-6-4-14
Maintain Bill History	Maintain billing information	Timeliness and controllability of billing information	Inspections	BLG-6-3-1, BLG-6-3-2, BLG-6-3-3, BLG-6-4-15
Maintain Bill History	Access billing information	Accessibility and availability of billing information	Inspection	BLG-6-3-4, BLG-6-3-5, BLG-6-3-6, BLG-6-4-16
Request Resend of Bills	Access billing information	Timeliness of the delivery	Inspections, logging	BLG-6-3-4, BLG-6-3-5, BLG-6-3-6, BLG-6-4-16

2.4 Data Sources

The data collected for the test are summarized in the table below.

Table 6-2: Data Sources for Functional Bill Cycle Evaluation

Document	File Name	Location in Work Papers	Source
Interconnection Agreement Contract Rates	Contract rates.xls	Electronic: Massachusetts Validation/Data sources/Contract rates.xls	Bell Atlantic
CRIS Contract Rates	MA CRIS Rates 11.9.xls (tab 1)	Electronic: Massachusetts Validation/Data sources/	Bell Atlantic
Customer Service Records	Hard Copy	BLG-6-L-II	Bell Atlantic/KPMG Consulting
Billing Completion Notices	Hard Copy	BLG-6-M-II	Bell Atlantic/KPMG Consulting
Daily Usage Feed Records	Refer to BLG5	BLG-5-A-1-8	Bell Atlantic
Revised KPMG BLG6 Minutes	Revised KPMG BLG_6 Minutes.doc	BLG-6-A-1	Bell Atlantic/ KPMG Consulting

Document	File Name	Location in Work Papers	Source
CABS User Guide, Section 4.4.2.3 – "Investigating and Clearing Hold Codes" Severity Definitions/Resource Assignments 1999	4.4.2.3.doc	BLG-6-A-I	Bell Atlantic
System Operations Guide Table of Contents, Sections 11.1 and 11.2	11.1.doc and 11.2.doc	BLG-6-A-I	Bell Atlantic
Sample Production Reports for Balancing CSR Details on Bill Day	KPMG BLG-6 Documentation 2.doc	BLG-6-A-I	Bell Atlantic
Sample Production Reports for Balancing the file between CRIS and CABS	KPMG BLG-6 Documentation 2.doc	BLG-6-A-I	Bell Atlantic
ITMS Procedures (applic. to rate changes)	ITMS Procedures1.doc	BLG-6-A-I	Bell Atlantic
CRIS Rate Change Documentation	Rtgchdoc.doc	BLG-6-A-I	Bell Atlantic
Section 2: Activities (applic. To rate changes)	GENRC.doc	BLG-6-A-I	Bell Atlantic
How to Compute Recurring Fractional Charges	Fractional Charges.doc	BLG-6-A-I	Bell Atlantic
Fractionalizing Recurring Charges	Obs 31 cabs guide sec 4-2.doc	BLG-6-A-I	Bell Atlantic
Memo from Bell Atlantic Finance Operations	Hard Copy	BLG-6-A-I	Bell Atlantic
Production Measurements: Attachment C	Hard Copy	BLG-6-A-I	Bell Atlantic
Bill Print Verification: Attachments A, R	Hard Copy	BLG-6-A-I	Bell Atlantic

Document	File Name	Location in Work Papers	Source
Facilities Based and Unbundlers' Customer Profile Form	Kpmgcpfurnk.doc	BLG-6-A-I	Bell Atlantic
Procedures for Processing CABS2 Media	Procedures for Processing CABS Media.doc	BLG-6-A-I	Bell Atlantic
CABS2 Policies Database Policy: NDM Verification Procedures	CheckingNDM.doc	BLG-6-A-I	Bell Atlantic
Help Desk Call Log 8.0	Refer to BLG-3	BLG-3-B-II-13	KPMG Consulting
CABS User Guide Section 4.3.1: Reprint Bill	4.3.11.doc	BLG-6-A-I	Bell Atlantic
DB2 Archive Process	10300.d0c	BLG-6-A-I	Bell Atlantic
Bell Atlantic North Records Retention Schedule	rcdssch.doc	BLG-6-A-I	Bell Atlantic
Bell Atlantic-Comdisco Application Recovery Statement	CABS2ARS.doc	BLG-6-A-I	Bell Atlantic
CABS Billing Output Specifications	Hard Copy	BLG-6-H-I to BLG-6-K-1	Telcordia
DTE MA Tariffs, Volumes 10, 14, 15, 17	Hard copy for all volumes	BLG-6-B-I to BLG-6-G-1	MA-DTE
Samples of Abbreviated, Administrative, Loop Summary and Sub-Account, Y40, and M40 bills	Hard Copy	BLG-6-A-I	Bell Atlantic
CLEC Handbook	http://www.bellatlantic.com/wholesale/html/cd_clec_hbk.htm	BLG-6-A-I	Bell Atlantic
Resale Handbook	http:wwwbellatlantic.com/wholesale/html/cd_resales_hbk.htm	BLG-6-A-I	Bell Atlantic

Document	File Name	Location in Work Papers	Source
CLEC Survey	Refer to BLG3	BLG-3-B-II-15 BLG-3-B-II-16 BLG-3-B-II-17	Various CLECs
Production Measurements: Attachment C	Hard Copy	BLG-6-A-I	Bell Atlantic
Bill Print Verification: Attachments A, R	Hard Copy	BLG-6-A-I	Bell Atlantic
Facilities Based and Unbundlers' Customer Profile Form	Kpmgcpfurnk.doc	BLG-6-A-I	Bell Atlantic
Procedures for Processing CABS2 Media	Procedures for Processing CABS Media.doc	BLG-6-A-I	Bell Atlantic
CABS2 Policies Database Policy: NDM Verification Procedures	CheckingNDM.doc	BLG-6-A-I	Bell Atlantic
Help Desk Call Log 8.0	Refer to BLG3	BLG-3-A-III	Bell Atlantic/KPMG Consulting
CABS User Guide Section 4.3.1: Reprint Bill	4.3.11.doc	BLG-6-A-I	Bell Atlantic
DB2 Archive Process	10300.d0c	BLG-6-A-I	Bell Atlantic
Bell Atlantic-North Records Retention Schedule	rcdssch.doc	BLG-6-A-I	Bell Atlantic
Bell Atlantic-Comdisco Application Recovery Statement	CABS2ARS.doc	BLG-6-A-I	Bell Atlantic
CABS Billing Output Specifications	Hard Copy	BLG-6-A-I	Telcordia
DTE MA Tariffs, Volumes 10, 14, 15, 17	Hard Copy	BLG-6-D-I, BLG-6-E-I, BLG-6-F-I, BLG-6-G-I, BLG-6-H-I	MA-DTE

2.4.1 Data Generation/Volumes

The transactional evaluation required the generation of order activity and usage data. Data resulting from service order activity were gathered from multiple sources including Local Service Requests (LSRs), Firm Order Confirmations (FOCs), and Customer Service Records (CSRs). Usage data was generated through tester calls, which generated Daily Usage Files (DUFs). These data were used to create expected results, which were compared to Bell Atlantic carrier bills delivered to KPMG Consulting.

This test did not rely on volume testing.

2.5 Evaluation Methods

Evaluation methods for BLG6 are described below.

2.5.1 Procedural Evaluation

To conduct the bill production/distribution and historical billing process evaluations, the test team utilized several methods:

1. A formal interview with BA-MA to discuss and document many aspects of Bell Atlantic's billing processes. KPMG Consulting then issued a series of follow-up questions and documentation requests, generated from the interview, to which Bell Atlantic responded.
2. A review of BA-MA documentation related to billing processes.
3. A CLEC focus group to collect real-life input from CLECs concerning operational issues related to the six Billing Domain evaluations.

A survey used to collect real-life input from CLECs concerning operational issues related to the six Billing Domain evaluations. The survey was distributed to the CLEC community in December 1999. Survey responses were received from six CLECs.

Using criteria outlined in the MTP, KPMG Consulting reviewed information gathered during this evaluation and assessed the sufficiency of the bill production/distribution and historical billing processes.

2.5.2 Transactional Evaluation

The transactional evaluation involved four components. Validation of the completeness and accuracy of bill data was conducted, as was a validation of the timeliness of bill delivery. In addition, historical bills were evaluated for consistency with original bills. A comparison of bills available in different media was also conducted. Activities involved validating the initial state of KPMG Consulting sub-accounts before the test scenarios (adding, changing, or migrating sub-accounts) were executed. The test team walked through the billing process with BA-MA to

gather detailed information about BA-MA bills (e.g., types, formats, contents). Test calls were placed to generate order activity and trigger charges to be billed. Bills reviewed by the test team are listed in Table 6-3 below. When bills were received, charges were compared to expected results.

Bills were sent to KPMG Consulting electronically and by regular mail. Timeliness of delivery was assessed according to the timeliness metric outlined in the Compliance Filing for New York State, Carrier-to-Carrier Guidelines, Performance Standards, November 15, 1999.

The test team requested historical bills from BA-MA for various bill types and verified that the duplicate bills contained the same data as the original bills.

The test team requested multiple bill media types at account set-up.[113] Y40 and M40 bills were sent in both paper and electronic form. CRIS Loop Sub-Account bills were sent in paper and tape cartridge format. KPMG Consulting compared the two media to ensure that they contained the same data.

Table 6-3: Bills Evaluated for the Test

Bill Type	Service Type	Bill Dates Evaluated	Total Bills Evaluated
Y40	UNE	December 6, 1999; January 6, 2000, February 6, 2000 (for LATAs 126 and 128)	6
M40	UNE	December 4, 1999; January 4, 2000, February 4, 2000 (for LATA 128) February 4, 2000 (for 126 LATA - new account)	4
CRIS Loop Sub-Accounts Bill	UNE	November 31, 1999, December 31, 1999, January 31, 2000	4 sub-accounts for November 31, 1999 bill 5 sub-accounts for December 31, 1999 and January 31, 2000 bills
CRIS Loop Summary	UNE	November 31, 1999, December 31, 1999, January 31, 2000	3

[113] Abbreviated and Administrative bills were only available in paper format. Resale bills were only available in electronic format. Consequently, these bills were not part of the bill media comparison.

Bill Type	Service Type	Bill Dates Evaluated	Total Bills Evaluated
Resale Bill	Resale	November 30, 1999, December 15, 1999, December 31, 1999, January 15, 2000, January 31, 2000, February 15, 2000	6
Abbreviated Bill	Resale	November 30, 1999, December 15, 1999, December 31, 1999, January 15, 2000, January 31, 2000, February 15, 2000	6
Administrative Bill	Resale	December 4, 1999, January 4, 2000, February 4, 2000	3

Note: KPMG Consulting did ask to receive a Directory Listing bill. However, Bell Atlantic attached these charges to a special bill number appearing on the Loop Summary bill instead. Thus, though KPMG Consulting did not receive a separate Directory Listing bill, the test team did validate the charges generated by adding additional directory listings to two sub-accounts. March and April bills were used to validate fixes and corrections implemented by BA-MA Analysis Methods.

The Functional Bill Cycle Evaluation included a checklist of evaluation criteria developed by the test manager during the initial phase of the Bell Atlantic-Massachusetts OSS Evaluation. These evaluation criteria, detailed in the *Master Test Plan*, provided the framework of norms, standards, and guidelines for the Functional Bill Cycle Evaluation.

3.0 Results Summary

This section identifies the evaluation criteria and test results.

3.1 Results & Analysis

The results of this test are presented in the tables below.

Table 6-4: BLG6 Evaluation Criteria and Results

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-6-1-1	Cycle balancing procedures are defined.	Satisfied	Cycle balancing procedures are defined. CABS utilizes a 3-way balancing process that examines billed information, journal activity and data from the tally database. The process is documented in the Systems Operation Guide. CRIS billing occurs in a multi-application environment in which inter-application balancing takes place. Bell Atlantic's Unitech ACR system is used to detect out-of-balance conditions. Cycle Balancing reports are published and reviewed at regular scheduled intervals.
BLG-6-1-2	Scope and objectives of cycle balancing are defined, documented and communicated to ensure accurate and timely billing.	Satisfied	For the CRIS and CABS systems, the objective of cycle balancing is to ensure that the data inputs (i.e., number of records, detailed bill charges) correspond to bill data outputs using the cycle balancing procedures outlined in BLG-6-1-1 above. When cycle balancing errors occur, procedures and timelines for resolving these errors are defined. This information is communicated internally.
BLG-6-1-3	Procedures and checks are in place to assure all stages within the billing process are valid.	Satisfied	Quality controls are in place to detect errors. Bills deemed to be in error are put in a "hold" status, investigated and corrected. Problems are logged and a System Investigation Request (SIR) is created and assigned a severity level. Data that is handed off from CRIS to CABS for creation of BOS-BDT formatted bills are monitored to ensure the CRIS magnetic tape format is correctly translated into CABS. In addition, CRIS and CABS systems run procedures that check the linkage between the Master account and its associated sub-accounts.

Test Cross-Reference	Evaluation Criteria	Result	Comments
			These processes are documented in software program codes rather than user documents.
BLG-6-1-4	Process includes procedures to ensure appropriate recurring and one-time charges are applied.	Satisfied	Procedures exist to verify rates are entered into rate tables in CRIS and CABS correctly. Updates to CABS rate tables are verified and assigned tracking numbers. CRIS rate changes are executed and tracked through the use of a project/control number authorized by Bell Atlantic. Bills are not routinely sampled for verification of accuracy.
BLG-6-1-5	Process includes procedures to ensure appropriate discounts and promotions are applied.	Satisfied	Procedures exist that ensure that rates (including promotion rates) entered into tables are verified before being applied. Charges are extracted from these tables and applied. Resale bills display charges after discounts have been applied.
BLG-6-1-6	Process includes procedures to ensure all payments and adjustments have been properly introduced and applied.	Satisfied	Procedures are in place to support the correct receipt, application and posting of customer payments. CABS and CRIS generates error reports when a payment cannot be applied to an invoice. The CABS error is reviewed and resolved by the Remittance Processing Center; CRIS error reports are sent to the Revenue Accounting Office (RAO) for investigation. Procedures supporting the receipt and posting of adjustments are in place. Adjustments entered into CABS prior to the bill date are applied to the next bill. An indicator appears on the bill when a claim is still in an open status. CRIS does not create a reference on the bill to indicate an open claim. Adjustments processed through CRIS are posted to accounts on the next day.
BLG-6-1-7	Process includes procedures to ensure appropriate proration of charges is applied.	Satisfied	The procedure for calculation of fractional recurring charges is provided in the CABS Guide, Section 4-2. The billing system calculates fractional recurring charges based upon a 30-day month. All monthly recurring charges are billed in arrears.

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-6-1-8	Process includes procedures to ensure usage charges have been properly introduced and applied.	Satisfied	Procedures exist to ensure usage charges are properly introduced and applied. Rates are stored in tables that define the logic by which rates should be applied. Cycle balancing procedures in CABS support the detection of errors in usage rating. Separate applications within CRIS capture usage totals; the two results are compared and differences are reconciled.
BLG-6-1-9	Process includes procedures to ensure applicable late payment charges have been properly introduced and applied.	Satisfied	Processes exist in both CRIS and CABS to ensure applicable late payment charges are properly applied. Late payment charges begin to apply the day after the payment due date. Holidays are excluded from the calculation, as are amounts in dispute. Bell Atlantic does not apply Late Payment Charges that are less than $5.00.
BLG-6-1-10	Process includes procedures to ensure customer data has been rolled forward from previous cycle.	Satisfied	Procedures are in place to ensure that customer data is correctly rolled forward from previous cycles. Previous balance due data is held in Bell Atlantic's billing systems. Bill balances are held in Bell Atlantic's CASH system. If no payment is applied, outstanding amounts will be listed on the next bill.
BLG-6-1-11	Process provides for check of correct formatting of bills.	Satisfied	Bell Atlantic has procedures that check the formatting of bills. Bills are produced in two formats: paper and electronic. Paper and CD-ROM bills are formatted in the same image. Electronic bill images are formatted and delivered via NDM and magnetic tape cartridge and are formatted in a BOS-BDT image. Each night, CABS checks BOS-BDT formatted bill files to ensure correct formatting. In the Print and Mail center, quality checks of paper bills are conducted for print quality, erroneous marks, side 1/side 2 verifications, bill cut, and envelope insertions are conducted.

Table 6-5: BLG6 Evaluation Criteria and Results: Bill Distribution Process

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-6-2-1	Bill delivery responsibilities are defined.	Satisfied	Responsibilities are defined. Bell Atlantic Customer Billing Support is responsible for bill printing and distribution.
BLG-6-2-2	Scope and objectives of bill delivery are defined, documented and communicated to ensure accurate and timely billing.	Satisfied	The scope and objectives of bill delivery are defined, documented and communicated. Customer requirements for the delivery of bills are met. Bill delivery is tracked on a daily basis. Bills are sent out within ten days from the bill date. Bell Atlantic's Bill Distribution Center handles bill delivery for bills formatted on paper, magnetic tape, and CD ROM.
BLG-6-2-3	Process includes procedures to ensure creation of customer bills on appropriate medium.	Satisfied	Procedures exist for assisting the customer in selecting the bill media. CLECs choose their preferred medium and this preference is recorded in the customer profile form at account set-up. This information is then used to ensure that that the preferred medium is used to send CLEC bills.
BLG-6-2-4	Process includes procedures to ensure billing media are transmitted or shipped per established schedules to correct locations.	Satisfied	Bell Atlantic's target is to mail bills within the sixth workday from the bill date. The billing address is defined on the customer profile form. Address changes can be made through the CLEC's Account Manager or Billing Help Desks.

Table 6-6: BLG6 Evaluation Criteria and Results: Historical Bills Process Evaluation

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-6-3-1	Bill history maintenance and bill resend responsibilities and activities are defined, documented, and communicated to ensure availability and timely delivery of prior period billing information to the customer.	Satisfied	Responsibilities are defined. Resend procedures from the customer perspective are documented in the CLEC handbook, Volume III, Section 9.3.9 and the Resale Handbook, Volume III, Section 4.3.4. Requests for bill resends are handled by the TISOC for paper bills and BASS Help Desk for bills sent via NDM. Requests made through the TISOC are executed immediately; requests made through the BASS Help Desk are assigned a trouble ticket to initiate action. CLECs can obtain information on historical bills by calling the Billing Help Desk.
BLG-6-3-2	The archive process(es) is defined and documented.	Satisfied	The CRIS and CABS archive processes are documented in the CABS user guide Section 4.3.1, DB2 Archive Process, and the Bell Atlantic-North Records Retention Schedule. CRIS bills are archived in Bill Archive and Retrieval (BARS) system. CABS bills and CSRs are maintained online for 13 months. CABS data is maintained offsite for six years while CRIS is maintained for seven years in paper image.
BLG-6-3-3	Process includes procedures to ensure bill history retention requirements are operationally satisfied (e.g., data maintained for the required period).	Satisfied	Bell Atlantic has implemented a Bill Archive and Retrieval System (BARS). Interviews indicate the BAR system archives history and generates related reports.
BLG-6-3-4	Process includes procedures to define, initiate, track, and manage retrieval and transmission of customer requested billing information.	Satisfied	Procedures to initiate, track and manage historical bills are outlined in the CABS User Guide, Section 4.3. For CRIS bills that are transformed into BOS-BDT format, records are retained in CABS for six months for those sent via NDM and three months for those sent via magnetic tape.

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-6-3-5	Customers are provided with instruction on how to request, track, and expedite billing resends.	Satisfied	Customers can request resends by contacting the TISOC and BASS help centers or by calling their Account Manager. The Bell Atlantic CLEC Handbook, Section 9.3.9 and Resale Handbook, Section 4.3.4, states that CLECs can request past bills by contacting their Account Managers.
BLG-6-3-6	Process includes procedures to log requests and communicate request status to customers.	Satisfied	Process includes procedures to log requests for resends of CABS and CRIS bills. The TISOC is to provide the customer with a promise date within 48 hours if it is not done on initial contact. Customers may query the TISOC for request status.

Table 6-7: BLG6 Transactional Evaluation Criteria and Results

Test Cross-Reference	Evaluation Criteria	Result	Comments
	Summary Bill Level:		
BLG-6-4-1	The appropriate major bill sections appeared on the bills per BA-MA's documentation.	Satisfied	Of the 37 bills evaluated, all but one bill met this criterion. KPMG Consulting's January 31, 2000 resale bill was originally sent with missing Customer Service Records (CSR), i.e., Category 40 records. Bell Atlantic corrected the bill and resent it. The appropriate data appeared on the resent bill.
BLG-6-4-2	The appropriate fields for each of the major billing sections appeared on the bills.	Satisfied	A review of several bill types, including Y40 (UNE-P), Resale, and M40 (Unbundled Facility Access) found that appropriate fields for the major billing sections appeared on the bills. Problems were uncovered in initial testing, including missing bill data records and CSRs for sub accounts on resale bills. These were corrected by BA-MA and not found in subsequent testing.

Test Cross-Reference	Evaluation Criteria	Result	Comments
			In addition, truncated rates were displayed on Administrative bills, although rate calculations were correct. Bell Atlantic indicated that a system fix would be implemented in the October 2000 system release (Initiative No. 362997).
	Bill Calculations:		
BLG-6-4-3	All calculations correspond with the calculation definition or tariff.	Satisfied	All calculations in the bills reviewed by the test team were correct.
	Cross Check Totals:		
BLG-6-4-4	All cross checks match expected results.	Satisfied	Cross-checks matched expected results with the exception of one of the 37 bills evaluated. On KPMG Consulting's December 31, 1999 resale bill, the CSR account total did not match the monthly charges shown on the bill due to the double-discounting of several USOCs. Bell Atlantic had applied the corrected rates and credits for the incorrect rates within the OC&C section of the same bill.
	Bill Content:		
BLG-6-4-5	The appropriate sub-accounts appeared on the correct bill.	Satisfied	Of the bills reviewed by the test team, all expected sub-accounts appeared, and no unexplainable sub-accounts appeared.
BLG-6-4-6	Balances from previous bills were rolled forward to the next bill.	Satisfied	All previously billed balances were correctly rolled forward on the bills reviewed.
BLG-6-4-7	Monthly recurring charges match expected results.	Satisfied	In initial testing, incorrect rates were noted for USOCs ULB (switched voice grade) and U21 (unbundled – x-link) which were found on Y40 bills. Bell Atlantic corrected the problem and subsequent bills were reviewed to ensure the correct rates were applied Recurring charges matched expected results in subsequent bills.

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-6-4-8	One-time Charges match expected result.	Satisfied	The test team found that one-time charges associated with orders matched expected results in 98% of the orders reviewed. A service order one time charge applicable to digital 2-wire premium service on an ISDN line defaults to the BA-NY rate of $12.82 instead of the BA-MA rate of $12.74. This problem will be corrected by a BA-MA system fix to be implemented in October, 2000.
BLG-6-4-9	Prorated charges match expected results.	Satisfied	The test team found that prorated charges associated with orders matched expected results in 98% of orders reviewed. There were three instances where this was not the case, all due to human error. In two cases, a Bell Atlantic representative entered an incorrect Effective Bill Date (EBD). Charges were correctly prorated by the billing system given the EBD. The third instance was due to a Bell Atlantic representative incorrectly processing an order, which the billing system did not recognize.
BLG-6-4-10	Order numbers match expected results.	Satisfied	Purchase Order Numbers (PONs) on Billing Completion Notices (BCNs) matched PONs on the bills reviewed by the test team in all cases. Initially, PONs appeared truncated on Loop and resale bills. Bell Atlantic corrected the problem and subsequent review found the PONs to appear in full.

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-6-4-11	Usage Charges match expected result.	Satisfied	The test team compared usage charges on the bills received during the test period to the expected usage charges created using the process in the CLEC handbook, Volume III, Section 9.3. Several discrepancies were found between the bill and the expected charges. BA-MA made modifications to the CLEC Handbook, Unbundler Scenarios for rating the calls. As a result of these changes, the expected usage charges were reconciled to the bill. Using the handbook and the support of the CLEC account manager, there is sufficient information for a CLEC to reconcile UNE charges billed by BA-MA.
BLG-6-4-12	Adjustments match expected results.	N/A	A small number of adjustments appeared on bills reviewed by the test team. In a single instance, the adjustment, for less than five dollars, appears to be incorrect.
BLG-6-4-13	Late charges match expected results.	Satisfied	Late charges matched expected results for all bills evaluated with the exception of one Y40 bill. Initially, the test team expected to see Late Payment Charges on these bills. These charges were less than five dollars, and therefore do not appear on BA-MA bills.
	Bill Timeliness:		
BLG-6-4-14	Bills were sent in a timely manner, as defined in the Carrier-to-Carrier metrics.	Satisfied	Initially, 81% of the bills reviewed were sent within the prescribed interval, ten business days of bill date. BA-MA corrected the problem causing this to occur. A subsequent test found that 100% of bills received were received within the prescribed time period. The Carrier-to-Carrier metrics requires that 98% of bills be sent within ten business days of bill date.

Test Cross-Reference	Evaluation Criteria	Result	Comments
	Bill Resends:		
BLG-6-4-15	Data on duplicate bill sent matched data on original bill.	Satisfied	For all bill resends on bills reviewed, data on the duplicate bills matched the data displayed on the original bills.
BLG-6-4-16	Bills were resent in a timely manner.	Satisfied	All bill resends were sent in a timely manner except for one. KPMG Consulting did not receive the M40 bill resend which was requested. However, the bill was re-requested and was sent in a timely manner.
	Bill Media Check:		
BLG-6-4-17	Data on one type of medium matched the same billing data captured on a different medium.	Satisfied	All data items checked on bills received and reviewed on multiple media contained the same data on each medium.

G. Test Results: CABS/CRIS Capacity Management Evaluation (BLG7)

1.0 Description

The billing capacity management evaluation consisted of a detailed review of the safeguards and procedures in place to plan for and to manage projected growth in the use of Carrier Access Billing System (CABS) and Customer Record Information System (CRIS) applications.

2.0 Methodology

This section summarizes the test methodology.

2.1 Business Process Description

Resellers are served by the CRIS, which is the same system used to serve Bell Atlantic-Massachusetts (BA-MA) retail customers. Unbundlers are primarily served by CABS.

2.2 Scenarios

Scenarios were not applicable to this test.

2.3 Test Targets & Measures

The test target was BA-MA's Capacity Management for CABS/CRIS. Processes, sub-processes, evaluation measures, and associated test cross-reference numbers are summarized in the following table. The last column, "Test Cross-Reference," indicates where the particular measures are addressed in Section 3.1 "Results & Analysis."

Table 7-1: Test Target Cross-Reference

Process	Sub-Process	Evaluation Measure	Test Cross-Reference
CRIS/CABS Capacity Management	Data collection and reporting	Data collection and reporting of business volumes, resource utilization, and performance monitoring	BLG-7-1-1, BLG-7-1-2, BLG-7-1-3, BLG-7-1-4, BLG-7-1-5, BLG-7-1-6
CRIS/CABS Capacity Management	Data verification and analysis	Data verification and analysis of business volumes, resource utilization, and performance monitoring	BLG-7-1-7, BLG-7-1-8, BLG-7-1-9, BLG-7-1-10
CRIS/CABS Capacity Management	Systems planning	Systems and capacity planning	BLG-7-1-11, BLG-7-1-12, BLG-7-1-13, BLG-7-1-14, BLG-7-1-15

2.4 Data Sources

The data collected for the test are summarized in the table below.

Table 7-2: Data Sources for CABS/CRIS Capacity Management Evaluation

Document	File Name	Location in Work Papers	Source
DCN&DR Design Review Pre-Development Phase	ASSETQST.doc	BLG-7-A-I-1	BA-MA
CABS2 flow chart	CABS2 Service Order Process Flows.ppt	BLG-7-A-I-2	BA-MA
Program/1 Distributed Systems Peak CPU and Memory Utilization	cap_mgt_peak_data.doc	BLG-7-A-I-3	BA-MA
IGS Wholesale Architecture	PO13-JB-summary-a1014.vsd	BLG-7-A-I-4	BA-MA
Data center server diagram	PO13-JB-scalability-a1014.vsd	BLG-7-A-I-5	BA-MA
NYNEX Certified Local Exchange Carrier (CLEC) Automated Service Order Application, Product Specifications Document	PO13-JH-cabspsd-a925.doc	BLG-7-A-I-6	BA-MA
Sentinel/EnView Overview	enviewinfo.ppt	BLG-7-A-I-7	BA-MA
The Bell Atlantic Firewall Infrastructure	KPMG_presentation.ppt	BLG-7-A-I-8	BA-MA
Bell Atlantic DCNDR ISO9002 Certificate	Hard Copy	BLG-7-A-I-9	BA-MA
ISO9001 non-conformity clearance report	Hard Copy	BLG-7-A-I-10	BA-MA
Architecture for Firewall-1 Implementation	Hard Copy	BLG-7-A-I-11	BA-MA

Document	File Name	Location in Work Papers	Source
INS Baseline Firewall Architecture, Project Description	Hard Copy	BLG-7-A-I-12	BA-MA
Bell Atlantic Firewall Forms	Hard Copy	BLG-7-A-I-13	BA-MA
Firewall Baseline Implementation Standards	Hard Copy	BLG-7-A-I-14	BA-MA
Firewall – Trouble Reporting Process	Hard Copy	BLG-7-A-I-15	BA-MA
Information and Network Security Policy Exception Process	Hard Copy	BLG-7-A-I-16	BA-MA
Firewall – Trouble Reporting Procedures Contact List	Hard Copy	BLG-7-A-I-17	BA-MA
1999 Score Card Considerations	Hard Copy	BLG-7-A-I-18	BA-MA
Enterprise Communications Workflow Process	Hard Copy	BLG-7-A-I-19	BA-MA
Modeled Demand Data Network Capital Requirements	Hard Copy	BLG-7-A-I-20	BA-MA
Network Capacity Planning	Hard Copy	BLG-7-A-I-21	BA-MA
DCNDR Role Description	Hard Copy	BLG-7-A-I-22	BA-MA
Bell Atlantic-North Utilization Report	Hard Copy	BLG-7-A-I-23	BA-MA
Capacity Planning Collection and Reporting Procedures	Hard Copy	BLG-7-A-I-24	BA-MA

Document	File Name	Location in Work Papers	Source
MVS Software Installation Acceptance Guide	Hard Copy	BLG-7-A-I-25	BA-MA
MVS Software Installation Implementation Guide	Hard Copy	BLG-7-A-I-26	BA-MA
IGS Wholesale Architecture	Hard Copy	BLG-7-A-I-27	BA-MA
EnView Network Diagrams	Hard Copy	BLG-7-A-I-28	BA-MA
Bell Atlantic Data Center, Network & Distributed Resources, Program 1 Support	Hard Copy	BLG-7-A-I-29	BA-MA
Mainframe computing forecasts	Hard Copy	BLG-7-A-I-30	BA-MA
Network & Corporate Systems DCN & DR Program 1 Support, KPMG Consulting Presentation (March 6)	Hard Copy	BLG-7-A-I-31	BA-MA
Quarterly Report, Bell Atlantic-North Business CPU Utilization Reports	Hard Copy	BLG-7-A-I-32	BA-MA
Quarterly Report, Bell Atlantic-North Production CPU Utilization Reports	Hard Copy	BLG-7-A-I-33	BA-MA
Quarterly Report, Bell Atlantic-North Production DASD Utilization	Hard Copy	BLG-7-A-I-34	BA-MA
Service Improvement Planning	Hard Copy	BLG-7-A-I-35	BA-MA

Document	File Name	Location in Work Papers	Source
Mainframe Provisioning	Hard Copy	BLG-7-A-I-36	BA-MA
DTIG & Network Planner Job Description	Hard Copy	BLG-7-A-I-37	BA-MA
Production Support Manager Job Description	Hard Copy	BLG-7-A-I-38	BA-MA
ISO9002 Table of Contents	Hard Copy	BLG-7-A-I-39	BA-MA
Change Management Implementation Standard	Hard Copy	BLG-7-A-I-40	BA-MA
Quarterly Report, Bell Atlantic-North Production DASD Utilization	Hard Copy	BLG-7-A-I-41	BA-MA
Bell Atlantic-North and South CPU Capacity Used vs. Capacity Available	Hard Copy	BLG-7-A-I-42	BA-MA
Application Planning	Hard Copy	BLG-7-A-I-43	BA-MA
Mainframe Scorecard Operating Procedures	Hard Copy	BLG-7-A-I-44	BA-MA
Mainframe Exception Report Operating Procedure	Hard Copy	BLG-7-A-I-45	BA-MA
Out-of-Cycle Modeled Demand Mainframe/ Midrange Capital Requirements	Hard Copy	BLG-7-A-I-46	BA-MA
Application Planning Processing Anomalies Investigation Guide	Hard Copy	BLG-7-A-I-47	BA-MA
Design Review Policy	Hard Copy	BLG-7-A-I-48	BA-MA
Service Improvement Planning Policy	Hard Copy	BLG-7-A-I-49	BA-MA

Document	File Name	Location in Work Papers	Source
DCN & DR Design Review Pre-Development Phase Template	Hard Copy	BLG-7-A-I-50	BA-MA
Program/1 Capacity Management	Hard Copy	BLG-7-B-I-1	BA-MA
Capacity Management Handbook, Methods & Procedures for Program/1, Distributed Capacity Metrics and Management	Hard Copy	BLG-7-B-I-2	BA-MA
Weekly Table, System Utilization Metrics Summary Report for EDI Order Servers	Hard Copy	BLG-7-B-I-3	BA-MA
NYNEX Certified Local Exchange Carrier Automated Service Order Application	Cabspsd.doc	BLG-7-B-I-4	BA-MA
HP Openview Description	Hard Copy	BLG-7-B-I-5	BA-MA
BLG7 Detailed Test Plan	Hard Copy	BLG-7-C-II-1	KPMG Consulting
Data Center Network & Distributed Resources Meeting Summary (March 6, 2000)	BA-NY Meeting-Summary-3-6-2000.doc	BLG-7-C-II-2	KPMG Consulting
Bell Atlantic Interview Summary Response for March 6, 2000	Bell Atlantic Interview Summary3700.doc	BLG-7-C-II-3	BA-MA
Meeting with Blue Hill Computer Center Operations Meeting Summary (April 13, 2000)	BA-PearlRiver-BHCC-Meeting-Summary-4-13-2000.doc	BLG-7-C-II-4	KPMG Consulting

Document	File Name	Location in Work Papers	Source
Bell Atlantic PonTronic Software Demo Meeting Notes (March 28, 2000)	Bell Atlantic PonTronic Software Demo.doc	BLG-7-C-II-5	KPMG Consulting
Blue Hill Computing Center Interview Summary (April 13, 2000)	BHCC_Intv_041300.doc	BLG-7-C-II-6	KPMG Consulting
Program/1 Capacity Management Meeting Summary (April 27, 2000)	BA-CapMgmt-Meeting-Summary-4-27-2000.doc	BLG-7-C-II-7	KPMG Consulting
Bell Atlantic Interview Summary Response for April 27, 2000	Interview Summary Response apr27.doc	BLG-7-C-II-8	BA-MA
Amdahl-Bell Atlantic EnView Case	mm002674.pdf	BLG-7-C-II-9	KPMG Consulting
Service-level Management, An Introduction for Executives	enviewus.pdf	BLG-7-C-II-10	KPMG Consulting
EnView, Service-Level Management Solution	mm002673.pdf	BLG-7-C-II-11	KPMG Consulting
Managing Continuous Availability, Exploring the Options for Efficient, Effective Management Tools	mm002797.pdf	BLG-7-C-II-12	KPMG Consulting
EnView Monitor	mm002809.pdf	BLG-7-C-II-13	KPMG Consulting
EnView Robot	mm002812.pdf	BLG-7-C-II-14	KPMG Consulting

Document	File Name	Location in Work Papers	Source
EnView 3.1 Summary of Enhancements	mm002931.pdf	BLG-7-C-II-15	KPMG Consulting
EnView Reporter	mm002932.pdf	BLG-7-C-II-16	KPMG Consulting
KPMG Consulting Exit Peer Review Signoff (July 2000)	Hard Copy	BLG-7-C-II-17	KPMG Consulting

2.4.1 Data Generation/Volumes

This test did not rely on data generation or volume testing.

2.5 Evaluation Methods

The evaluation methods used for this test consisted of interviews with Bell Atlantic personnel, reviews of publicly available information, and reviews of documentation provided by Bell Atlantic.

2.6 Analysis Methods

The CABS/CRIS Capacity Management Evaluation included a checklist of evaluation criteria developed by the test manager during the initial phase of the Bell Atlantic-Massachusetts OSS Evaluation. These evaluation criteria, detailed in the *Master Test Plan*, provided the framework of norms, standards, and guidelines for the CABS/CRIS Capacity Management Evaluation.

The data collected were analyzed employing the evaluation criteria referenced above.

3.0 Results Summary

This section identifies the evaluation criteria and test results.

3.1 Results & Analysis

The results of this test are presented in the table below.

Table 7-3: BLG7 Evaluation Criteria and Results

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-7-1-1	Processes exist for capturing business and transaction volumes.	Satisfied	BA-MA has a process for capturing CABS/CRIS business and transaction volumes. Tools and utilities such as Sentinel/EnView are used to collect data and are made available for future analysis. The data capturing processes are described in internal BA-MA documentation.
BLG-7-1-2	Processes exist for measuring and tracking resource utilization.	Satisfied	There are automated processes for capturing CABS/CRIS resource utilization. Specifically, BA-MA uses the Resource Monitoring Facility (RMF) to collect information on resources such as the central processing unit (CPU) and disk array storage device (DASD) on an hourly basis. Additional automated tools used to capture resource utilization include SAR and SVMon. These processes are documented in internal BA-MA documentation.
BLG-7-1-3	The performance of those elements necessary for the processing of electronic transactions are measured and tracked.	Satisfied	BA-MA monitors CABS/CRIS systems resource utilization at different levels. Automated monitoring tools and applications such as Toolkit exist to monitor the network level. At the computing level, monitoring utilities and reports such as SVMon and Resource Monitoring Facility (RMF) are employed. These processes and tools are described in internal BA-MA documentation.
BLG-7-1-4	Tools exist to monitor and collect resource utilization data.	Satisfied	BA-MA employs a variety of tools and utilities to collect CABS/CRIS resource utilization data. Some of the instruments used are Resource Monitoring Facility (RMF), Toolkit, and SVMon. These instruments collect data from the network to the computing level. Internal BA-MA documentation provide descriptions of the tools and their processes. The instruments are described in internal BA-MA documentation.

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-7-1-5	Performance is monitored at all applicable levels (e.g., network, database server, application server, client, etc.).	Satisfied	For CABS/CRIS, performance is monitored at all applicable levels. At the application and user level, BA-MA employs Sentinel/EnView to monitor and capture performance. Sentinel/EnView has "robots" which reside on user machines. These robots send common test transactions from the user's end and then monitor the performances of the transaction responses in real-time. For computer systems, performance monitoring of important components such as the central processing unit, memory, and disk array storage device utilization exist. The network performance is monitored and reported on using internally developed utilities such as Toolkit and Critical IP Report. Internal BA-MA documentation describes these performance management tools and processes.
BLG-7-1-6	Instrumentation and other tools exist to monitor performance.	Satisfied	A variety of utilities and tools are used by BA-MA to monitor performance. Automated tools and processes are in place to monitor performance at applicable levels of CABS/CRIS. These tools and instruments are documented in BA-MA internal documents.
BLG-7-1-7	A process exists for forecasting business volumes and transactions.	Satisfied	BA-MA has established processes for forecasting business volumes and transactions. Regular forecasting activities are carried out and various groups participate in regular meetings to plan for future requirements. Forecast information from CLECs is also used as input into the forecasting process. Forecasting processes are documented internally within BA-MA.

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-7-1-8	Processes exist to provide the business volume tracking and forecasting data for use in capacity management planning.	Satisfied	Business volume data relating to capacity management activities are tracked and stored for analysis. For instance, within Bell Atlantic's network, there is an intranet website (Enterprise Network Services) that makes available historical performance data. In addition, BA-MA considers information provided by CLEC forecasts to assist in the capacity management process. Detailed performance records from a central processing unit (CPU) level and upwards are available for capacity management planning.
BLG-7-1-9	Processes exist for reviewing the performance of the business and transaction volume forecasting process.	Satisfied	BA-MA conducts regular performance reviews of the business and transaction volume forecasting process. Performance volumes are compared against forecasts and if anomalies are observed then corrective actions are taken. The forecasting process is then revisited to make adjustments as necessary. This is documented in internal BA-MA documentation.
BLG-7-1-10	Processes exist for verification and validation of data associated with processing of transactions.	Satisfied	Performance data is verified and validated. For example, BA-MA Capacity Planners regularly analyze data and are on alert for data anomalies. The performance data captured by the Sentinel/EnView system is compared against established norms so if any differences are found then the appropriate notification is made. Additionally, Sentinel/EnView has two servers that run simultaneously to provide data redundancy and backup.
BLG-7-1-11	A capacity management process is defined and documented.	Satisfied	Bell Atlantic has defined and documented capacity management processes. If there are anomalies in application processing, the Bell Atlantic Application Planner reviews and investigates exception reports. This is in addition to regular reviews of existing systems capacity carried out by the Application Planners and other Bell Atlantic teams. These processes are described in internal Bell Atlantic documentation.

Test Cross-Reference	Evaluation Criteria	Result	Comments
BLG-7-1-12	The capacity management process provides for the incorporation of resource usage and capacity in its planning process.	Satisfied	Resource usage and capacity is considered in the planning process for CABS/CRIS capacity management. Reports on resource usage and capacity are regularly generated and analyzed by BA-MA personnel who then turn these into inputs for planning capacity management. This is documented in internal BA-MA documentation.
BLG-7-1-13	The capacity management process provides for the incorporation of performance monitoring results.	Satisfied	Monitored performance results are considered in the planning process for capacity management. There are documented internal processes within BA-MA that describe the data gathering process and how it is to be analyzed and considered in developing plans.
BLG-7-1-14	Systems are designed in a manner that would allow them to scale to meet increases in demand.	Satisfied	The elements that support CABS/CRIS are scalable; therefore, allowing CABS/CRIS to handle increases in demand. For example, new mainframe platforms are ordered with additional central processing units that are idle but may be activated by BA-MA upon purchasing a password from the vendor to enable the central processing units.
BLG-7-1-15	Processes exist which provide guidelines for increasing capacity, load re-balancing, or systems tuning based on fluctuations in demand.	Satisfied	The elements that support BA-MA's CRIS/CABS systems have monitors that trigger alarms or notifications, if certain thresholds are met or exceeded, that lead to remedial actions. For instance, additional processing capacity may be brought online. Procedures on how resource utilization anomalies are to be handled are described in BA-MA documentation.